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# Flexibility in Income Shifting under Losses\*

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## Abstract

This study examines the flexibility of multinational firms to adjust their income-shifting strategies – whether using transfer pricing or internal debt – during the tax year to react to affiliates’ operating losses. We develop the concept that under flexibility, multinationals can adjust their inter-affiliate payments ex post (i.e., after financial outcomes are revealed, but before the end of the tax year), to minimize worldwide tax payments. Without flexibility, multinationals must commit to their affiliates’ income-shifting strategies ex ante (i.e., before financial outcomes are revealed). Our central prediction is that under ex-post income shifting, loss affiliates report lower transfer prices and internal leverage than profitable affiliates; under ex-ante income shifting, affiliates report the same transfer prices and internal capital structure, regardless of making losses. Using novel data on direct transfer payments and internal debt of Norwegian affiliates, we find empirical evidence that transfer pricing, particularly related to user fees, but not internal debt, provides flexibility to adjust income shifting ex post. In additional tests, we confirm that our results reflect flexibility rather than loss affiliates’ poor performance. Our study should interest tax policymakers and researchers by identifying how various mechanisms allow multinational firms to shift income when they face losses.

**Keywords:** income shifting, losses, debt shifting, transfer prices

**JEL classification:** F23, H25, H87

# I. INTRODUCTION

In recent years, tax avoidance using income shifting between affiliates of multinational companies (hereafter MNCs) has become a hotly debated issue among policymakers and academics. In its “Base Erosion and Profit Shifting” (BEPS) report, the Organisation for Economic Co-operation and Development (OECD) (2013) states that “at stake is the integrity of the corporate income tax”(p. 8). The OECD identifies transfer pricing and debt shifting as the two main strategies for shifting income from high-tax to low-tax countries. The use of both devices to reduce MNCs’ overall tax payments is an important topic examined in the accounting, finance, and economics literatures.<sup>1</sup> However, policymakers and the academic literature have largely ignored income-shifting strategies in MNCs with affiliates that incur losses.

Our study informs this debate by considering income shifting under losses and, in particular, analyzing whether enough flexibility exists that allows transfer prices and internal debt to respond to current-period losses. We define flexibility as the ability of an MNC to adjust its income-shifting strategies *during* the same tax year in which information on financial performance outcomes is revealed; we refer to this activity as ex-post income shifting. The lack of ex-post flexibility, i.e., that an MNC must commit to its income-shifting strategies *before* observing financial performance outcomes, is referred to as ex-ante income shifting. By understanding the mechanisms underlying flexibility, we add to insights on income shifting and its interplay with shift-to-loss incentives.

Our research is motivated by the surprisingly small literature on the intersection of income shifting and losses. Importantly, Klassen et al. (1993) discuss the tax incentives for MNCs to shift income into loss-making affiliates to lower worldwide tax payments. However, they also argue that loss-making affiliates should be dropped from their empirical analysis to seemingly eliminate the bias from reversed incentives under losses. As a result, omitting loss affiliates has since become the dominant empirical strategy in (almost) all research on income shifting, despite the fact that losses commonly occur.<sup>2</sup>

Notably, the approach to drop loss-making affiliates hinges on the assumption that MNCs have full flexibility to make intra-year adjustments to their income-shifting strategies in response to losses. As our hypothesis development later shows, this assumption is non-trivial. If MNCs have little flexibility, they are forced to adjust their income-shifting strategies ex ante, i.e., no later than at the beginning of the year. For that purpose, they must consider the likelihood of incurring losses by the end of the year before actual financial outcomes are observed. Such precautionary behavior in which the MNC will not take full advantage of income shifting opportunities will be present in all their affiliates

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<sup>1</sup>For a general overview, see, e.g., Gresik (2001), Hanlon and Heitzman (2010), and Mintz and Weichenrieder (2010).

<sup>2</sup>Cooper and Knittel (2006) report that 40-50% of U.S. C corporations report losses. In our sample, 30% of the affiliates report losses.

independent of their final profit or loss status. Only if MNCs have full flexibility can they adjust their income-shifting strategies ex post, i.e., they can wait to observe financial outcomes during the year before considering whether and how much income to shift between affiliates by the end of the year. Hence, only under full flexibility do shift-to-loss incentives concentrate in loss-making affiliates so that removing the loss-making affiliates will remove all loss-shifting incentives from the data.

We empirically explore flexibility in income shifting under losses using a novel affiliate-level panel data set of Norwegian based multinational entities' tax returns during 1998-2005. The key advantage of the data is that we can directly observe incoming and outgoing transfer payments between affiliates, as well as internal leverage ratios by affiliate over time. We separately regress intra-firm transfer payments and internal leverage ratios on an indicator variable equal to one if the affiliate experiences a loss in that year, and control for a variety of other factors that may explain income shifting, including past profitability as a proxy for ex-ante beliefs. If being in a loss position significantly reduces affiliates' contemporaneous outgoing transfer payments and internal leverage, then we infer that at least some flexibility exists to shift income ex post.

Our findings suggest measurable differences in flexibility under losses. Namely, MNCs demonstrate intra-temporal flexibility in adjusting income shifting via transfer pricing, particularly related to user fees and intangible assets, when an affiliate incurs a loss. We estimate that Norwegian loss affiliates disclose net outgoing transfer payments that are about 11 to 12 percent of total assets, or the equivalent of an average (median) of \$13m to \$15m (\$4m to \$5m) USD lower than in profitable affiliates. These results suggest that MNCs do not simply do top-side, tax-only adjustments after year-end, but rather adjust their transfer prices during the tax year to shift income as financial performance is observed. Meanwhile, our tests do not detect significant flexibility for debt shifting. However, since smaller outgoing transfer payments and lower internal leverage reduce the risk of experiencing a loss, our estimates may suffer from an attenuation bias. In addition, our sample sizes are small and include affiliates that are small and medium-sized, as relative to IRS size thresholds and U.S. publicly traded MNCs in Compustat (i.e., our affiliates report smaller sales, total assets, and number of employees). For these reasons, we remain cautious when interpreting the point estimates in economic terms as marginal effects from being in a loss position. It is still possible that MNCs (or non-Norwegian affiliates) have some flexibility to also adjust internal leverage ex post. Nevertheless, our results suggest that MNCs have more flexibility in adjusting transfer prices than internal debt in response to current-period losses.

In sensitivity tests, we ensure that our results on transfer pricing are not driven by loss affiliates reducing outgoing payments simply due to their poor performance compared to profitable affiliates, or by small entities. First, we re-estimate our models after dropping affiliates with decreasing sales revenue, employment, investments in property, plant, and

equipment (PP&E), and (adjusted) cost of materials. Second, following the U.S. Internal Revenue Service's (IRS) threshold for defining "large- and mid-size" businesses, we only keep affiliates with the equivalent of \$10m USD or more in total assets. Third, we compare MNCs with both loss and profit affiliates to MNCs with only loss affiliates to ensure that the reduction in transfer payments we observe is not due to poor performance for the entire MNC group, but rather due to tax incentives to shift less income to profit affiliates. Fourth, we focus on profit and loss affiliates that report close to break-even income to rule out that large differences in underlying performance drive our results. Finally, we eliminate affiliates with solvency concerns. In all our tests and despite small sample sizes, we continue to find robust evidence consistent with our main results that loss affiliates make lower outgoing transfer payments than profit affiliates. Yet, we also continue to find an insignificant coefficient for the effect of losses on internal debt. Overall, our tests support the interpretation that transfer prices, but not internal debt, exhibit flexibility to adjust income-shifting strategies ex post, and that our results are not simply driven by affiliate performance.

Our study makes three contributions. First, we add to the surprisingly sparse literature on MNCs' income-shifting behavior in the presence of affiliate losses. Importantly, we develop the notion that flexibility to adjust income-shifting strategies during the current year can vary across MNCs. We identify and test several mechanisms for income-shifting and find greater flexibility in adjusting transfer payments, especially related to user fees, relative to adjusting internal debt payments. Thus, we extend studies such as Klassen et al. (1993), Gramlich et al. (2004), Onji and Vera (2010), and De Simone et al. (2017) by providing new evidence on how – and how much – MNCs shift income in the presence of tax incentives related to losses.

One important implication of our findings is that if an MNC faces limited flexibility, precautionary behavior should apply to all its affiliates, independent of their final profit or loss status. Hence, MNCs with limited flexibility will shift less income than predicted by standard research that only examines profitable affiliates and does not take this precautionary behavior into account. Though these studies will overestimate the level of income shifting, they will, however, underestimate the true, policy-relevant tax sensitivity of income-shifting strategies because the standard tax incentives used in these studies are not adjusted for loss expectations.

Second, our results shed light on the "puzzle" in prior literature that transfer prices seem to be highly sensitive to tax incentives, but debt appears to be less sensitive (e.g., Büttner and Wamser 2013; Møen et al. 2011). Our results suggest that this puzzle can at least be partly explained by less precautionary behavior when MNCs use relatively more flexible transfer prices than in the case of relatively less flexible debt. MNCs with more flexible mechanisms to shift income during the current year (i.e., transfer prices) will not need to commit as strongly ex ante to their income shifting strategies as MNCs that have

less flexible mechanisms (i.e., internal debt). Our results and interpretation are also consistent with the view that transfer pricing generates comparably lower concealment costs because it is more difficult to enforce the arm's-length principle for transfer prices than thin capitalization rules for internal debt (see Blouin et al. 2014 and De Simone 2016).

Third, our findings contribute to policy deliberations by governments in high-tax countries that are concerned about an erosion of their tax base by income shifting in MNCs (OECD 2013). For example, controlled-foreign-company (CFC) rules that deny low taxation of passive income in tax havens and include such income in the tax base of the headquarters' country, as recommended in Action 3 of the OECD (2015) BEPS Action Plan, have little power if income is shifted to a loss-making affiliate in a high-tax country. Our results suggest that tax authorities should not only focus on transactions between profitable affiliates in high-tax countries and related parties in low-tax countries, but also scrutinize payments made to loss-making affiliates in other high-tax countries. This is particularly true for MNCs that are flexible in using their income-shifting strategies, i.e., MNCs with large intra-firm transfer payments, including intangible goods. Our findings do not suggest, however, that tax authorities should refrain from auditing less flexible MNCs. By anticipating ex ante the likelihood of incurring losses, less flexible MNCs can still shift substantial income even though they sometimes report profits and losses. This insight matters in particular for MNCs with low transfer-pricing possibilities, but large amounts of financial capital.

The study proceeds as follows. We review prior literature and develop our hypothesis in Section II. We discuss the institutional background of Norway and the data in Section III. We present the empirical strategy and results in Section IV. Section V concludes.

## II. BACKGROUND AND HYPOTHESIS DEVELOPMENT

### Prior Literature

Two common strategies for MNCs to minimize their global tax payments are to use transfer pricing and debt shifting. Under the first strategy, the prices of intra-firm trade – both for intangible assets and intermediate input goods – are tax-adjusted to shift out income from high-tax (i.e., non-tax haven) to low-tax (e.g., tax haven) affiliates. Under the second strategy, internal borrowing whose interest is tax deductible is used to capitalize a non-tax-haven affiliate, rather than using non-tax-deductible equity. Under both strategies, a tax-efficient firm structure usually involves an affiliate in a tax haven that serves as a profit and financial center (Mintz and Smart 2004; Schindler and Schjelderup 2012). This haven affiliate overcharges license fees from other (non-haven) affiliates' use of intangible assets, buys and resells intermediate inputs to related affiliates at a mark-up without adding substantial value, or provides internal loans. One example of these strategies used

in practice is Apple Inc., with its profit center Apple Sales International located in Ireland (Levin and McCain 2013).

Prior research on *profitable* MNCs finds that transfer pricing is sensitive to tax incentives, whether it is measured directly (see Clausing 2003; Bernard et al. 2006; Dyreng and Markle 2016; and Davies et al. 2017) or indirectly (see Swenson 2001; Bartelsman and Beetsma 2003; Langli and Saudagaran 2004; and Huizinga and Laeven 2008). Adjusting internal debt is also found to be an important way to shift income in profitable firms, but it appears to be less tax sensitive than transfer pricing (see Büttner and Wamser 2013; Møen et al. 2011). Büttner and Wamser (2007) conjecture that income-shifting adjustments to the capital structure cause substantial costs.

Klassen et al. (1993) discuss distinctive features of loss affiliates and point out that there is an incentive to shift income into such affiliates. However, the authors drop loss-making affiliates in their main sample, instead of studying their characteristics. Since this approach seemingly eliminates the bias from reversed incentives under operating losses, omitting loss affiliates has since become the dominant empirical strategy in (almost) all research on income shifting.<sup>3</sup>

In considering *unprofitable* MNCs, Grubert et al. (1993) provide initial, but indirect evidence supporting the presence of shift-to-loss strategies. Using IRS panel data on US companies from 1980 to 1987, they show that taxable income of foreign-controlled firms is much more concentrated around break-even than that of domestic firms. Their result suggests that MNCs use their affiliates to balance losses with profits to minimize overall profitability, and thus tax payments. In subsequent research, Gramlich et al. (2004) and Onji and Vera (2010) analyze income-shifting behavior within domestic Japanese trusts ('keiretsus'). They find evidence that losses in some Japanese affiliates are balanced by shifting in income from other Japanese affiliates. Onji and Vera credit this behavior to tax motives that arise from the fact that the Japanese corporate income tax did not provide group provision in order to consolidate keiretsus' overall taxable income. In a similar vein, De Simone et al. (2017) examine whether the unexplained income of loss affiliates is correlated with tax-related factors. They find that both the potential tax savings and ability of profitable affiliates to contribute profits to loss affiliates affect unexplained profits (losses).

Three main differences exist between these studies and ours. First, although studies on profitable MNCs find evidence of income shifting through the use of transfer pricing and internal debt, they do not consider loss firms in their estimations. Second, although studies on loss MNCs find evidence of income shifting, it is not clear which mechanisms are used, whether transfer pricing, internal debt, or both. Third, prior literature does not consider whether or how flexibility allows MNCs to adjust their income-shifting strategies

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<sup>3</sup>Some studies include loss-making affiliates in their robustness analysis, but the focus is still on affiliates making profits, and without isolating the role of flexibility (e.g., Dharmapala and Riedel 2013).



in response to current-period losses. Importantly, prior research neglects the impact of precautionary behavior that is triggered by inflexibility. That is, ex-post profitable affiliates will base income shifting strategies on their expected domestic tax rate, after taking loss probabilities into account, rather than the higher statutory tax rate that prior studies use. As we explain further in the next section, as long as an income-shifting mechanism features limited flexibility and empirical models do not control for loss expectations, the estimates on income shifting will be biased upward while the tax sensitivity of income shifting mechanisms will be biased downward.

## Hypothesis Development

In general, a profitable MNC can generate global tax savings by deducting expenses in a higher-taxed affiliate and shifting out those payments to a lower-taxed affiliate, preferably in a tax haven. The resulting global tax savings will be proportional to the difference in the tax rates of the affiliates. A tax-efficient MNC will optimally balance its marginal tax savings against marginal costs of shifting income. These marginal costs are based on U-shaped tax-avoidance costs, often called concealment costs, and comprise effort and resource costs, as well as expected penalties from taking advantage of the ambiguity of regulation such as arm's-length pricing, thin-capitalization or CFC rules, or from violating such rules deliberately (e.g., Haufler and Schjelderup 2000; Grubert 2003). They also capture income shifting's adverse effect on affiliates' financial accounts, for example triggering reduced credit-worthiness (Randolph et al. 2005, 319). Thus, tax efficient transfer-pricing and debt-shifting behavior can be characterized by the trade-off

$$t_i^m - t_1 = C'(I), \quad (1)$$

where  $C'(I)$  represents marginal concealment costs of shifting income  $I$ ,  $t_1$  is the tax rate in the low-tax or tax-haven affiliate that will always be profitable, and  $t_i^m$  is the marginal tax rate in a high-tax or non-haven affiliate  $i$ . In profitable affiliates, this marginal tax rate equals the statutory rate  $t_i > 0$ . The tax rate differential then represents the marginal tax savings from income shifting.<sup>4</sup>

From this trade-off, an important insight follows. The last unit of income that is shifted from a profitable higher-taxed affiliate  $i$  to the tax-haven affiliate bears an implicit tax burden that is equal to the statutory tax rate of country  $i$ , because equalizing marginal

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<sup>4</sup>The main body of the underlying income-shifting literature assumes territorial taxation with dividend exemption, as it is the case for most OECD countries. Even for U.S. MNCs, however, U.S. tax on foreign profits can be avoided as long as the profits remain outside the U.S. The introduction of check-the-box rules in 1997 also had major effects on shielding foreign profits from U.S. tax; see Blouin and Krull (2015). Ample anecdotal evidence reports that large U.S. MNCs, such as Apple, Google, and General Electric, deposit their international profits in offshore tax havens. For example, in October 2015, the U.S. Public Interest Research Group estimated that U.S. Fortune 500 companies stored more than \$2.1 trillion offshore (McIntyre et al. 2015).

tax savings and marginal costs also implies

$$t_i = t_1 + C'(I). \quad (2)$$

Even if the tax-haven affiliate has a zero explicit tax rate ( $t_1 = 0$ ), shifted income will be implicitly taxed by the necessary marginal concealment costs (cf. Scholes et al. 2015, section 5.2). Thus, the implicit tax burden on the last unit of shifted income is equal to the domestic tax rate  $t_i$ , although there is no explicit tax payment in the tax haven.

An often neglected feature in the income-shifting literature, however, is that a substantial share of MNCs' affiliates is unprofitable (Cooper and Kittel 2006). Such losses are mostly unpredicted (stochastic) and driven by price or sales shocks, for example. Ignoring inter-temporal loss offset provisions for now, loss-making affiliates face an effective marginal tax rate of zero ( $t_i^m = 0$ ), regardless of the host country's statutory tax rate  $t_i$ , and their tax savings from shifting out income become negative, cf. equation (1).

Hence, there are two new incentives under the case of loss affiliates. First, not shifting out income any longer will save the explicit tax burden in the low-tax jurisdiction (if any) plus the implicit tax burden from marginal concealment costs, and thus marginally increase global after-tax profits proportional to  $t_i$ . Second, there is an incentive to shift income from other, profitable non-haven affiliates into a loss affiliate, which takes the function of an 'ideal' tax haven as long as it is in a loss position. Concealment costs of shifting income to a loss-making non-haven affiliate should be significantly lower than shifting income to a well-known aggressive tax haven with a zero tax rate (e.g., Cayman Islands or Bermuda), since transactions to non-haven countries are likely less suspicious to tax authorities. Any such transaction with loss-making affiliates will reduce implicit taxation of shifted income (through lower costs of concealing) and increase net tax savings.

Importantly, MNCs' incentives for such *intra*-temporal shift-to-loss strategies also prevail in the presence of *inter*-temporal loss offset provisions. Loss carryforwards are not inflated with interest and their present value decreases over time. In addition, loss carryforwards are uncertain in that they might be limited in the time they can be used.<sup>5</sup> Therefore, an MNC needs to compare the loss-making affiliate's expected present value of future tax savings to the net tax savings from settling the losses in this affiliate with taxable profits in other affiliates in the current year. Though the latter alternative causes concealment costs, the marginal concealment costs for the first unit of shifted income are close to zero. Consequently, it is generally optimal to start with *intra*-temporal income shifting and to switch to *inter*-temporal shifting and loss carryforwards when marginal concealment costs become sufficiently large.

Although hardly analyzed, the shift-to-loss strategies described above are intuitively

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<sup>5</sup>Our empirical analysis later in the study focuses on the years 1998 to 2005. During this period, major OECD countries allowed loss carryforwards as short as only five years (see OECD 2002, Table 2.2).

straightforward. However, a crucial assumption for such shift-to-loss strategies has not been analyzed: firms' flexibility to revert payment streams. Specifically, affiliate losses might be expected with some probability, but their occurrence remains stochastic. Therefore, it is unclear how flexible MNCs are to adjust their income shifting strategies and revert payment streams following unexpected or uncertain income shocks during a tax year.

Specifically, two scenarios are possible. First, MNCs have (some) flexibility in setting their transfer prices and choosing their internal capital structure and can adjust their income-shifting strategies during the same tax year. This scenario means that MNCs have the ability to shift income *ex post*, i.e., after information on financial performance outcomes is revealed. Hence, the MNC can adjust its income shifting at any point during the tax year, after (ex post) performance outcomes have been observed. The most extreme case of flexibility (i.e., full flexibility) describes an MNC that decides on all intra-firm prices and its capital structure on December 31, after it has observed operating profits in all its affiliates for that year.

Second, MNCs have no flexibility in the current year to change transfer prices and internal leverage. This scenario requires a commitment to income-shifting strategies before the revelation of financial performance outcomes. Under such *ex-ante* income shifting, an MNC only knows the probability distribution of losses in its affiliates for this year, and it cannot revisit its decisions during the year. Hence, the MNC needs to decide on its income shifting strategy early in the period and before (ex ante) performance outcomes have been observed. The most extreme example is an MNC that has to decide on both its intra-firm prices and its capital structure on January 1 of the current year.<sup>6</sup>

These scenarios give rise to contrasting behavior. Under full flexibility (i.e., ex-post shifting), an MNC does not face any uncertainty in its tax planning and it will optimally adjust its income shifting to the ex-post profitability of each affiliate. This implies that profitable affiliates, facing a tax rate  $t_i > 0$ , will balance the tax savings against marginal concealment costs, according to equation (1), and shift out income. Accordingly, profitable affiliates feature net outgoing transfer payments that are higher than the arm's-length transfer payments to unrelated third parties would be, and they have significant levels of internal leverage. In contrast, loss-making affiliates will report less than the arm's-length transfer payments and will have no (or little) internal leverage. In sum, under (full) flexibility, shift-to-loss incentives are concentrated in loss-making affiliates, and profitable and loss-making affiliates will differ in their transfer payments and internal leverages.

If an MNC has no or little flexibility in the current year (ex-ante shifting), it will take the loss probability into account whenever it decides on its income-shifting strategies.

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<sup>6</sup>Note that in reality, firms will not exhibit either full flexibility or no flexibility, but rather fall somewhere in-between. We discuss the two extremes in order to isolate and highlight their impact on behavior.

This implies that such an MNC will balance the expected (rather than statutory) tax-rate differential against the marginal costs of tax avoidance. As it is unclear ex ante which affiliates will end up with losses, all affiliates within the MNC will exhibit at least some precautionary behavior. That is, all affiliates will anticipate potential losses and reduce their use of transfer pricing and debt shifting compared to the case of ex-post shifting in profitable affiliates. More importantly, comparable affiliates will report the same transfer payments and internal leverage, no matter whether they will be in a loss position at the end of the tax year. Thus, under inflexibility to adjust income shifting during a tax year, being in a loss position does not affect transfer payments and internal leverage.

We summarize our main inference between the two income-shifting scenarios with the following hypothesis:

**Hypothesis 1** *If multinational firms have flexibility to adjust their income-shifting strategies ex post, that is, during a tax year and in response to negative income shocks, then loss-making affiliates will feature lower net outgoing transfer payments and less internal leverage than profitable affiliates.*

For the purpose of our empirical analysis, the no-flexibility situation is a useful benchmark as a null hypothesis, since it suggests that there should be no effect from the loss position status on income-shifting strategies. If we can reject this null and find a significantly negative relation between losses and (1) net outgoing transfer payments and/or (2) internal leverage ratios, our results would imply that MNCs have at least some flexibility in making income-shifting decisions in the same period as losses are incurred.

A subordinate conjecture is that flexibility to adjust income shifting should be highest for pricing intangible assets or setting user fees, compared to tangible goods or shifting internal debt. The value of intangibles is inherently difficult to measure, which provides substantial flexibility to shift income, see, e.g., OECD (2015). Thus, intangibles should also provide substantial flexibility to react to new information on profitability.

The issue of flexibility to adjust income shifting during a tax year can have important implications for the empirical literature on income shifting. Empirical studies that drop loss-making affiliates from their samples base their regressions on statutory tax rates and statutory tax rate differentials. Based on our discussion, the underlying assumption behind this procedure is that full flexibility exists to adjust to losses. However, precautionary behavior might also be present in ex-post profitable affiliates if there is substantial inflexibility to adjust the tax strategies. Anticipating loss probabilities implies that these affiliates will take the lower *expected* tax differentials, rather than the higher *statutory* tax rate differentials, into account. Regressing income shifting on the statutory tax differentials, as many empirical studies do, will underestimate the tax sensitivity of income shifting and the MNCs' reaction to changes in profitability and tax incentives.

### III. INSTITUTIONAL SETTING AND DATA

#### Institutional Background

Before describing the Norwegian data we use to test for flexibility in income shifting, we briefly explain the broader institutional details of Norway's tax system to help put our results into context.<sup>7</sup> Companies resident in Norway are in principle subject to corporation-level tax on worldwide profits and capital gains, while foreign companies are subject to corporation tax on Norwegian sourced profits.<sup>8</sup> De facto, however, Norway's tax system is a territorial, source-based system with dividend exemption for corporate shareholders that own at least 10% of a dividend-issuing domestic or foreign entity (see KPMG 2013). In fact, over our sample period of 1998-2005, exemptions applied to corporate shareholders with any ownership level if the dividend-paying entity operated within the European Economic Area. Finally, Norway does not apply withholding taxes on interest and royalty payments.

The determination of taxable income in Norway is based on firms' financial reporting results, adjusted for tax legislation. As a general principle, all expenses incurred for the purpose of obtaining, maintaining or securing taxable income are deductible. The deduction of certain expenses is limited by legislation, including on charitable donations and political representation. As a result, Norway does not have full book-tax conformity, although Atwood et al. (2010, Table 1) report that book-tax conformity in Norway is higher than in other major economies, including the U.S., Canada, and Germany.

Following a fundamental tax reform in 1992, company profits in Norway were taxed at a flat rate of 28% until 2013.<sup>9</sup> The corporate tax rate in Norway was significantly below the average statutory corporate tax rate in both the OECD countries and the EU member states after the tax reform. Gradually, however, other countries also reduced their rates. By 2005, the Norwegian statutory corporate tax rate was slightly above the OECD and EU averages.<sup>10</sup> The convergence of the EU and OECD tax rates relative to the Norwegian tax rate implies that the incentive to shift profits out of Norway has been increasing over time, although the tax rate differential does not appear very significant (e.g., compared to the U.S. case where corporate tax rates are 35%). During our sample period, Norway

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<sup>7</sup>Our presentation of the institutional setting draws on Ministry of Finance (2011, 2014), OECD (2012, 2013) and KPMG (2013), in addition to annual reports from the transfer pricing team in the Norwegian Tax Administration 2009-2012, available at [www.skatteetaten.no/no/Bedrift-og-organisasjon/Drive-bedrift/Aksjeselskap/Internprising/arsrapporter/](http://www.skatteetaten.no/no/Bedrift-og-organisasjon/Drive-bedrift/Aksjeselskap/Internprising/arsrapporter/). The 2011 report is available in English.

<sup>8</sup>A company is regarded as resident in Norway when it is incorporated under Norwegian law and registered in the Norwegian Registry of Business Enterprise, or if its central management and control are located in Norway.

<sup>9</sup>Because income from petroleum extraction is subject to a special tax regime with a 51%-rate on top of the ordinary tax on profits, we exclude oil and gas companies from our sample.

<sup>10</sup>In 1998, the first year of our sample, the average tax rates in the EU and OECD were around 35% and 37%, respectively. In 2005, the last year of our sample, the average tax rates in the EU and OECD were about 23 and 25%, respectively.

did not allow loss carrybacks, but did allow a loss carryforward period for up to 10 years (Ernst & Young 2005). Aarbu and MacKie-Mason (2003) provide indirect evidence that Norwegian entities were concerned about the expiration of their loss carryforwards, which suggests an incentive to shift income intra-temporally.

In more recent developments and outside our sample period, Norway introduced explicit transfer pricing regulations in 2007 and 2008, as well as increased its enforcement efforts. The Norwegian Tax Administration reported that by 2012, the average annual income added due to audits over transfer pricing over the years 2009-2012 was 10.3 billion NOK (or the equivalent of \$1.9 billion using 2012 exchange rates). In 2012 alone, the Tax Administration uncovered 114 cases of what they claimed was manipulation of transfer prices and false invoicing between closely related companies. The enforcement actions resulted in adjusting taxable income upwards by about 7.2 billion NOK (\$1.3 billion), which increased Norway's corporate tax collections in 2012 by about 2.4%. In fact, 22% of the added income was not disputed by the companies. These recent statistics suggest that Norwegian entities had the opportunity to (and did) engage in significant transfer pricing manipulation during our sample period pre-dating the increased enforcement actions in Norway. On the issue of internal debt shifting, Norway did not introduce thin capitalization rules until 2014. Again, this late enforcement effort suggests an opportunity for Norwegian entities to shift income via internal debt transactions between affiliates during our 1998-2005 sample period.

## Data

Our sample is constructed by combining three data sources. First, Dun&Bradstreet provides data on financial statistics for all companies registered in Norway. Second, SIFON supplies information on foreign ownership of Norwegian firms. Third, the Norwegian Tax Administration (Skattedirektoratet) and Statistics Norway provide tax return data on transactions and debt relationships between Norwegian entities and their foreign affiliates (taken from the form Utenlandsoppgaven, i.e., 'Report of Foreign Transactions').<sup>11</sup> All variables from tax returns and financial statements are measured at the end of the year and thus after shifting income. The advantage of using tax returns is that we can directly identify transfer payments and internal leverage at the affiliate-level over time, which cannot be done with available financial statements. The disadvantage is that because the tax return information is limited, our main regression sample sizes are small. In addition, our

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<sup>11</sup>We focus on the Norwegian setting because all other available (European) databases do not provide the necessary information for our empirical analysis. For example, the Amadeus dataset by Bureau van Dijk does not contain information on internal debt and transfer payments. The MiDi database of the German Bundesbank reports capital structures in foreign affiliates, but neither provides pre-tax profit/loss statements nor any information on intra-firm trade (i.e., transfer payments). An alternative would be U.S. data on intra-firm transfers from the U.S. Bureau of Economic Analysis that contains similar information as the Norwegian data (for selected years). However, these data are proprietary and unavailable to the authors.

sample includes mostly medium-sized affiliates based on the IRS size definition, but these affiliates are small relative to U.S. publicly traded MNCs in Compustat. As a result, we conduct various tests to check the sensitivity of our results.

Although we do not observe the actual transfer prices, we do observe in reference to the Norwegian entity all direct transfer payments, disaggregated into several categories, made to ('outgoing') and received from ('incoming') related affiliates, including the parent, outside Norway.<sup>12</sup> Thus, we use transfer payments as a proxy for transfer prices. For example, outgoing transfers include user fees (mainly license fees on intangibles, plus royalties and rents) and payments for tangible intermediate goods (e.g., purchases) that the Norwegian entity makes to a foreign affiliate. We also observe the capital structure of each affiliate. This feature allows us to measure internal debt shifting. However, we have limited scope to measure non-tax related incentives affecting income shifting. For example, we do not have data to measure the MNC's degree of centralization, managerial incentives, or explicit concealment costs.

All Norwegian entities must disclose to the Norwegian Tax Administration (i.e., submit the form Utenlandsoppgaven) if they have any ownership in a tax-haven affiliate or ownership share of at least 10% in any non-haven, non-Norwegian affiliate. Because an MNC parent company needs full control over its affiliates to implement the income-shifting strategies, we restrict the MNC subsample further. We classify control as owning directly or indirectly at least 50% of the shares of an entity. That is, a Norwegian entity is classified as an MNC if it either owns, directly or indirectly, at least 50% of a foreign affiliate (i.e., a parent or mother company), or a foreign owner controls at least 50% of the shares of the Norwegian entity (i.e., a daughter or affiliate company).<sup>13</sup> Note that we can only observe the non-Norwegian affiliates with whom the Norwegian affiliate has direct transactions. Even then, the information we have about these affiliates is limited; besides transactions, we only observe the counter-party affiliate's pre-tax income, taxes paid, and total assets.

Our panel data set covers Norwegian daughter companies in the years 1998 to 2005.<sup>14</sup> We include all entities except financial firms and producers of oil and gas, which are subject to special laws, tax rates, and regulations, including restrictions on prices. The length of the sample period is limited by the fact that detailed data on transactions are not collected by the Norwegian Tax Administration or Statistics Norway for later years.

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<sup>12</sup>The data do not report transactions made within Norway between related affiliates; the data only capture cross-border transactions, i.e., if the related affiliate is non-Norwegian.

<sup>13</sup>The data source containing transfers and internal leverage aims to capture Norwegian companies with ownership abroad, and thus mainly contain Norwegian mother (or parent) companies. Of the Norwegian companies with ownership abroad, about 15% are again owned by a foreign mother company. Hence, our data contain information about a modest number of Norwegian daughter companies.

<sup>14</sup>In additional analyses, we also examine Norwegian mother (i.e., parent) companies. No significant results emerge using this sample, consistent with Dischinger et al. (2014) who find that the income distribution is skewed in favor of the headquarters location, with less income shifted away from high-tax parent companies compared to affiliates with the same tax rate.

In the main regressions, we focus on 128 observations where the Norwegian daughter affiliates report non-zero transfer payments with related foreign affiliates, but including observations with zero transfers does not change our conclusions. In subsequent tests, we extend the data to include zero-transfer payment observations in order to add degrees of freedom to our limited sample. Due to the modest sample size, we try to preserve as much of the original data as possible. We only exclude very few observations with extreme values, notably negative sales and negative total assets. Finally, the measures for transfer payments are winsorized at the 1st and 99th percentiles, while we restrict the total internal leverage to the interval  $[0; 1]$ .<sup>15</sup>

In order to test for flexibility in intra-temporal loss shifting, we generate a dummy variable ( $L_{it}$ ) equal to 1 if the Norwegian entity  $i$  is in a loss position in year  $t$ ; zero otherwise. As we explain later, this measure will be our independent variable of interest. In terms of dependent variables, we first calculate net outgoing transfer payments as gross outgoing transfers minus gross incoming transfers (using the Norwegian entity as the reference point for incoming or outgoing), where transfer payments include the sum of royalties, licenses, rents, and purchases. We scale transfer payments by the mean total assets of the Norwegian affiliate over the sample period. Second, we calculate the internal leverage ratio as affiliate debt, scaled by mean total affiliate assets over the sample period. Using the mean total assets over the sample period in the denominator ensures that any changes in transfer payments or internal leverage are caused by changes in income shifting rather than assets.

## IV. EMPIRICAL ANALYSIS

### Empirical Strategy

We estimate the following baseline OLS model for our empirical analysis:

$$y_{ijt} = \beta_0 + \beta_1 L_{ijt} + \beta_2 L_{ijt-1} + \beta_3 L_{ijt} * L_{ijt-1} + \mathbf{z}'_{ijt} \boldsymbol{\theta} + \delta_t + \alpha_j + \epsilon_{ijt}, \quad (3)$$

where the dependent variable  $y_{ijt}$  is either transfer payments or internal leverage in affiliate  $i$ , being active in industry  $j$  at year  $t$ . In the main specifications, we successively use net outgoing transfers, as well as total internal leverage. We use variations of these variables

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<sup>15</sup>In the full sample of daughters (i.e., including those with zero transfer payments), 6 observations are deleted due to negative sales and negative total assets. In addition, a few observations are omitted from the analysis of internal debt because their leverage ratio exceeds one (no observations had a negative leverage ratio), but they are retained in the analysis of transfer payments (the difference being 10 in the main analysis where observations with zero transfers are omitted and 24 in the full sample where observations with zero transfers are included). Therefore, depending on the regression specification, for our transfer payment tests we have up to 128 (604) firm-year observations from 52 (213) unique firms, i.e., affiliates in the main (full) company sample. For our internal leverage tests, we have up to 118 (580) firm-year observations from 48 (209) unique firms, i.e., affiliates, in the main (full) company sample.



in sensitivity checks described later.

Our key independent variable is  $L_{ijt}$ , or the loss-position indicator, making  $\beta_1$  the coefficient of interest in our study. We interpret this coefficient on the current-period loss indicator as whether the firm has reacted in the same period as the loss to adjust its transfer payments or internal leverage, given past performance and expectations of incurring a loss in the current period. A significant coefficient  $\beta_1 < 0$  on the current-period loss indicator suggests the presence of ex-post flexibility, consistent with our Hypothesis 1, while an insignificant coefficient suggests ex-ante shifting and no ex-post flexibility.

A primary empirical concern in identifying ex post flexibility is taking into account the autocorrelation of losses, since managers can form expectations of future losses ex ante. Indeed, we find a substantial autocorrelation in losses, about 0.40 in our data. Therefore, we include earlier years' performance as a control for the ex-ante beliefs about performance in year  $t$ . Specifically, we include the lagged loss position in the regression, as well as an interaction term between the current and lagged loss position that is equal to one if an affiliate experienced a loss position both at time  $t$  and  $t - 1$ . A significantly negative sign for the coefficient on the lagged loss position indicator would suggest that ex-ante strategies are used after controlling for ex-post strategies. A significantly negative sign for the interaction term would indicate that firms with persistent losses are better positioned to expect them and make adjustments within a year than those that did not have losses at  $t - 1$ , perhaps adjusting partly both in year  $t - 1$  and year  $t$ . In order for our main coefficient for losses at time  $t$  to capture ex-post shifting exclusively, we must control for these loss expectations. In addition, all regressions include year and 4-digit-NACE-codes industry fixed effects, represented by  $\delta_t$  and  $\alpha_j$ , respectively. We cluster standard errors by affiliate (Petersen 2009).

The vector  $z_{ijt}$  contains several affiliate characteristics. First, since the data do not contain enough variation to use methods that rely on within-affiliates variation (i.e., fixed effects or models in changes), we add the lagged dependent variable to partially control for affiliate specific effects. The remaining characteristics are considered as standard control variables in the income-shifting literature.<sup>16</sup> Pre-tax income as percent of total assets serves as a performance measure. The maximum tax rate differential between affiliates within the MNC (i.e., the Norwegian tax rate of 28% less the tax rate for the affiliate with the lowest tax rate) captures the potential payoff from income shifting in terms of utilizing a lower tax rate. The log of total assets and employment act as controls for size related to capital and labor, respectively. We control for asset tangibility by including fixed assets scaled by total assets. We include the age of the entity and a control for tax loss carryforwards. Finally, in the transfer payment regressions, we include interest-bearing debt as a percent of total assets in the Norwegian affiliate to control for debt tax

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<sup>16</sup>See, e.g., Møen et al. (2011), Büttner and Wamser (2013), Huizinga et al. (2008), and Rajan and Zingales (1995) for debt shifting, and Grubert (2003) and Huizinga and Laeven (2008) for transfer pricing.

shields. We do not include it in the internal debt regressions as it would place leverage on both sides of the equation.

Before proceeding to the empirical results, we caution the reader when interpreting the coefficient for the current loss-position indicator. First, as mentioned above, we cannot use models that rely on within-affiliate variation. In addition to including the lagged dependent variable, we have conducted several tests to check the sensitivity of our results. Second, since smaller outgoing transfer payments and lower internal leverage reduce the risk of experiencing a loss, our estimates may suffer from an attenuation bias.

Due to small sample sizes, and despite our attempts to address the shortcomings in the data, we remain cautious when interpreting the point estimates in economic terms as marginal effects from being in a loss position. Generally, we are more interested in how the direction of the effects corresponds to our main prediction, and the extent to which the estimated effects are robust.

## Descriptive Statistics

Panel A in Table 1 presents descriptive statistics. Importantly, we observe that losses occur in 30% of our 128 observations. In addition, based on the \$10m USD asset size definition by the U.S. Internal Revenue Service (which is equivalent to 65m NOK using the 2005 exchange rate), we find that 108 of our 128 observations qualify as medium-to-large affiliates. In particular, the median total assets is above 263m NOK, or about \$41m USD. The median number of employees is 42.<sup>17</sup> Thus, although our sample is small, it contains economically substantive firms. We also report that the mean (median) pre-tax income is approximately 61.5m NOK (7m NOK), or about \$9.7m USD (\$1.1m USD). Furthermore, we observe that the average tax rate differential is close to zero, reflecting that Norwegian companies do not face a particularly different corporate income tax rate from the non-Norwegian affiliates, as mentioned earlier.

In Panel B, we report the number of observations and the number of observed losses [in brackets] for each year. Due to missing data in the control variables, the number of observations is much lower in 2005 than in the earlier years. We have investigated whether this lack of observations affects our results. First, we impute missing values in 2005 by replacing those missing with the values for 2004. Second, we exclude the year 2005. In both tests, our results are unaffected (untabulated).

[Insert Table 1 about here]

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<sup>17</sup>We use total assets and employment as size measures. An alternative size measure is total sales. The mean, median, and standard deviation for total sales in our main sample is 767m NOK, 148m NOK, and 188m NOK, respectively. These values correspond to \$121m USD, \$23m USD, and \$30m USD, respectively, using the 2005 exchange rate.

## Main Results

Our main results for transfer payments are reported in Table 2. Columns (A) and (B) are our main specifications. The only difference between them is that column (B) also controls for the lagged transfer payments. The coefficient of interest on the loss position indicator at time  $t$  is quite similar in both columns, at -12.16 and -10.72, and significant at the 10 percent level. Our results suggest that the net outgoing transfer payments scaled by total assets are on average approximately 11 to 12 percent lower in a year that an affiliate experiences a loss. The control variables are mostly insignificant, but we note that the maximum tax rate differential comes out as significant with the expected positive sign in Column (A). Further analysis shows that the findings on losses are driven by gross outgoing rather than incoming transfers (untabulated).

In Columns (C) and (D), we split the transfer payments into two components, user fees and purchases related to tangible goods.<sup>18</sup> We continue to scale these transfer payments by the affiliate's average total assets over the sample period. We expect that the flexibility for income shifting is greater for user fees, as arm's-length prices are more difficult (or impossible) to observe (e.g., for trademarks and patents) compared to tangibles (e.g., cost of materials). In addition, some user fees are due at the end of the year instead of being a regular expenditure during the year, thus affording this category more flexibility than tangibles to respond to losses using income shifting. Consistent with our expectation, we find that MNCs have more flexibility for transfers with user fees than tangibles. In fact, while we can reject zero flexibility for transfers with user fees, we cannot do so for transfers with tangibles. Note that the variation in the data is very limited when we split the transfers into these components, potentially explaining the non-rejection of zero flexibility for the transfers in tangibles.

That our results are driven by transfers in user fees is important along another dimension. It reduces concerns that our results are driven, at least in part, by market-demand effects, in that affiliates with lower demand for their products might mechanically make fewer outgoing transfer payments due to poor performance and lower intermediate inputs. In particular, if demand were a significant factor, the result on tangibles should be significant as well. We will return to the performance issue later in our sensitivity tests.

In Columns (E) and (F), we extend our sample by including observations with zero transfers, and re-estimate the specifications in (A) and (B). Even though these observations do not help identify the effects of interest, the higher number of observations adds degrees of freedom that will be useful in sensitivity tests later where we would like to further restrict our small sample. We observe that the coefficient for current losses

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<sup>18</sup>The user fee category combines royalties, licenses, and rents because they are charges for an underlying property whose ownership remains fixed within an affiliate. The tangibles category uses the cost of materials because both the ownership rights and the underlying property are moved across affiliates upon the transfer payment. More descriptive statistics are provided in Appendix A.

on transfers drops when including the zero-transfer observations, but that the coefficient remains negative and significant.

In untabulated tests, we included a lagged loss position indicator for being in a loss position in period  $t - 2$  and an interaction term between being in a loss position in periods  $t - 2$  and  $t$ , but they do not change our inferences. We find consistent results on our main variable of interest, i.e., a significantly negative coefficient on the loss indicator in period  $t$ . We also note that the control variables have little effect on the loss coefficient. The insignificant sign on the prior period loss indicator suggests that ex-ante income-shifting strategies are not a significant determinant of transfer payments. Similarly, the insignificant sign on the interaction between the current and prior period loss indicators suggest that, in the presence of ex-post income shifting, anticipation of losses does not seem to manifest in ex-ante and ex-post income shifting jointly. Despite the insignificance on the control variables, the industry and time fixed effects capture a substantial amount of the limited variation in our data, yielding R-squared values as high as 74%.

In sum, we find support for flexibility and Hypothesis 1 with respect to transfer payments. In fact, our estimates are likely conservative for two reasons. First, as discussed earlier, our analysis uses a small sample and may also suffer from an attenuation bias.

Second, our sample includes small and medium-sized affiliates relative to IRS size thresholds and U.S. publicly traded MNCs in Compustat. For example, using data for fiscal year 1998 (which is the baseline year in our sample period), median total assets for non-financial, non-oil and gas U.S. MNCs in Compustat are quite larger at \$714m USD; median number of employees (where data are available) are 4,000; and median total sales are \$717m USD. We also find that 22% of the observations report losses. Scale effects in tax avoidance suggest, however, that income shifting should be much more prominent in large MNCs, consistent with Rego (2003) and Dyreng et al. (2008, 79). This result implies that MNCs have some flexibility to adjust their transfer payments during the year and in response to new information on profitability. Nevertheless, the magnitude of our result, its significance, and the fact that we do not find effects for transfer payments on tangibles, also suggest that *full* flexibility appears to be unlikely.

The coefficient on our current-period loss indicator implies that net outgoing transfer payments are about 11 to 12 percent of total assets lower in years with losses. With mean (median) total assets equal to roughly 780m (263m) NOK, we estimate that an average (median) loss-making affiliate reduces net outgoing transfer payments by about 85 to 94m (29m to 32m) NOK per year, or the equivalent of an average (median) of \$13m to \$15m (\$4m to \$5m) USD using the average exchange rate in 2005. As noted before, however, we remain cautious in interpreting point estimates. Instead, we mainly focus on how the direction of the effects corresponds to our main prediction.

Our findings and interpretation are consistent with anecdotal evidence on transfer prices. Following conventional wisdom among practitioners, it is very expensive to change

transfer prices ad hoc, particularly on tangibles. In fact, the OECD recommends that such changes should trigger audits by tax authorities, at least in profitable affiliates. In Germany, for example, the highest fiscal court ('Bundesfinanzhof') decided in 1997 that any transfer payment benefitting a controlling owner and not being contracted on in detail in advance should be treated as a disguised dividend and fully taxed (see Bundessteuerblatt 1998 Teil II Nr. 17, p. 545, and for a critical comment, Schön, 1998, p. 291).

However, for invoicing the use of intangibles, there is still some flexibility. In 2012, the German Bundesfinanzhof ruled that its earlier 1997 decision cannot be applied to international transactions that are sheltered by a double tax treaty following the standard principles for 'dealing at arm's length' in the OECD Model Convention. In the 2012 case, a German affiliate was allowed a tax-deductible transfer payment for management services by a Dutch parent company for the tax year 2004, even though a retrospective contract on the management service was agreed upon on December 29, 2004, i.e., the end of the tax year (see Bundessteuerblatt 2013 Teil II Nr. 23, p. 1046).

Table 3 reports our main results for internal leverage. We find that current losses have no significant effect on leverage, neither in the main regression sample [Columns (A) and (B)] nor in the extended sample [Columns (C) and (D)]. In untabulated tests, we included a lagged loss position indicator for being in a loss position in period  $t-2$  and an interaction term between being in a loss position both in periods  $t-2$  and  $t$ , but they do not change our inferences. In particular, we continue to find an insignificant coefficient on the loss indicator in period  $t$ . It thus seems that firms have little, if any flexibility to adjust their capital structure in response to current losses. However, even though we cannot reject that the true coefficients are zero, the large standard errors suggest that we cannot definitively reject that at least some ex-post or ex-ante debt shifting takes place. Among the control variables, the fixed-asset ratio is the only consistently significant characteristic. The negative coefficient is consistent with collateral allowing for more external debt financing and less internal debt financing (Rajan and Zingales 1995), as well as depreciation tax shields substituting for tax-deductible internal debt (DeAngelo and Masulis 1980).

[Insert Table 3 about here]

Although attenuation bias and a sample with many small and medium-sized affiliates prevents us from concluding that MNCs do not have flexibility to adjust their internal leverage ratios during the tax year, such inflexibility does correspond with other findings on firms' capital structure. A large literature in finance shows that firms are not very flexible in adjusting their *external* leverage ratios in response to tax rate changes (e.g., Korteweg 2010). Furthermore, internal debt is driven by tax motives, but the tax sensitivity is low, pointing to adjustment costs for the capital structure (e.g., Büttner and Wamser 2013). Both these findings on tax rates, as well as our results on shift-to-loss

incentives in Table 3, are consistent with MNCs facing some inflexibility in their income shifting strategies.

### Main Sensitivity Checks

So far, our transfer pricing results indicate that affiliates make fewer outgoing transfer payments when they are in a loss rather than profit position. Our interpretation of the results is that these smaller outgoing transfer payments occur due to ex-post flexibility in income-shifting strategies. However, it may instead be the case that loss affiliates make smaller outgoing transfer payments simply because of their worse performance. To rule out that poor performance is driving our results, we report two sets of sensitivity tests. As noted above, we introduce observations with zero transfer payments because our sensitivity tests require further data restrictions; although zero transfer payments will not improve our identification of income shifting, it increases the degrees of freedom to allow for further sub-sample analyses.

In our first set of sensitivity tests, we try to rule out that a reduction in demand (which may be more acute in loss affiliates) is driving our main results. In addition, we investigate whether the results are driven by small affiliates. The former concern arises because our data only report total transfer *payments* and not their components (i.e., changes in *quantities* versus changes in *prices*). The latter concern stems from the fact that our data are dominated by small and medium-sized affiliates.

With respect to the performance concern, we re-estimate Eq. (3) after dropping affiliates with decreasing sales revenue from period  $t - 1$  to  $t$ . Dropping these affiliates reduces the likelihood that a drop in quantities caused the loss, which in turn could have reduced total transfer payments, while transfer prices in fact remained unchanged. These results are reported in Table 4, Panel A. We continue to find results consistent with our main findings that loss affiliates make lower outgoing transfer payments (see column (A)). Also consistent with our previous findings, we do not find a significant coefficient for the effect of losses on internal leverage (see column (B)).

[Insert Table 4 about here]

Using a similar intuition, we re-estimate Eq. (3) after dropping affiliates with decreasing employment, investment in PP&E, and (adjusted) cost of materials from period  $t - 1$  to  $t$ . The first two of these variables can be used directly, since they are not affected by internal transactions. We adjust cost of materials by subtracting the imported cost of materials from total cost of materials in order to avoid mechanically capturing international income shifting.<sup>19</sup> We continue to find coefficients consistent with our main results that loss affiliates make lower outgoing transfer payments than profit affiliates (see columns

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<sup>19</sup>The results are robust to estimating the model without this adjustment (untabulated).

(C), (E), and (G) of Table 4). Also consistent with our previous findings, we do not find a significant coefficient for the effect of losses on internal leverage (see columns (D), (F) and (H) of Table 4).

To evaluate the sensitivity of our results to affiliate size, in Columns (A) and (B) of Table 4 Panel B we report estimates of Eq. (3) for affiliates with total assets greater than 65m NOK, or the equivalent to the IRS's \$10m USD of total assets to define medium and large firms (using 2005 exchange rates). In Columns (C) and (D), we report estimates of Eq. (3) for affiliates with total sales greater than \$10m USD. In Columns (E) and (F), we report estimates of Eq. (3) for affiliates with more than 100 employees. Even though the sample sizes are reduced substantially in these tests, in particular when restricting on employment, our previous results remain robust. If anything, the effects become stronger for larger affiliates. These results are intuitive, since larger affiliates (and larger MNCs) likely have more resources available to participate in income-shifting strategies that reduce global tax payments (e.g., Rego 2003).

In our second set of sensitivity tests, reported in Table 5, we study firms with profitable affiliates abroad, and remove affiliates with potential solvency issues and persistent losses. In Columns (A) and (B) of Panel A, we introduce an interaction term between the loss indicator dummy for the Norwegian affiliate and a dummy equal to one if we observe at least one profitable foreign affiliate. We do so because an MNC has incentives to either shift income into an unprofitable affiliate or shift less income out of an unprofitable affiliate only if it has other affiliates that report profits. When studying transfers in Column (A), the interaction term comes out as significantly negative, while the loss indicator dummy for the Norwegian affiliate turns insignificant. Thus, we conclude that income-shifting adjustments indeed take place in those MNCs that have profitable affiliates abroad. This test also ensures that our results are not simply driven by poor performance by the multinational group as whole. It rules out that the lower transfer payments by the Norwegian daughter occur because the counterparty foreign affiliate is also in a loss position, and thus poor performance reduces outgoing transfer payments in all affiliates generally. When studying leverage in Column (B), on the other hand, we continue to find insignificant results for current losses, and the interaction term is also insignificant. In Columns (C) and (D), we address solvency issues by excluding affiliates with below-median working capital. In untabulated tests, we re-estimate Eq. (3) after adding a control for working capital or cash (either logged or as a share of total assets). In all cases, the results remain robust.

As discussed with our empirical strategy earlier, affiliates that are unable to generate any profits might be unique and treated differently from other affiliates. In Panel B, we investigate the role of persistent losses. In Columns (A) and (B), we exclude affiliates generating losses in all years they appear in the data, while in Columns (C) and (D), we exclude affiliates that generate losses in at least 75% of the years. Results remain similar.

[Insert Table 5 about here]

In addition to the reported tests, we have checked whether our results hold in a subsample of firms close to break-even. We define break-even as firms between the sample's 25th and 75th percentiles of ROA (i.e., -6% and +18%) or between -1.5% and +1.5% ROA. The results in both cases remain stable (untabulated). This test helps to rule out that differences in performance drives our results and reduces problems related to omitted variables because both profit and loss firms have similar performances but happen to fall on different sides of zero (see Hopland 2014 for additional discussion). Finally, we have used short-term and long-term (as opposed to total) debt scaled by total assets as the dependent variable in the internal leverage tests, and continue to find an insignificant coefficient on the loss position indicator (untabulated), consistent with our main results.

Overall, our empirical tests support the interpretation that transfer prices, but not internal debt, exhibit flexibility to adjust income-shifting strategies ex post, i.e., as financial performance is being observed, but before the end of the tax year. Importantly, the poorer performance one may expect from loss affiliates compared to profit affiliates do not explain our results.

### Further Sensitivity Analyses

With respect to our control variables, we perform two more sensitivity analyses (untabulated). First, we test whether there is a difference in income-shifting behavior depending on whether the parent company is located in a country with worldwide taxation (i.e., that uses the tax credit system). Neither a dummy variable that takes the value of one if the parent is located in one of the OECD countries with a tax credit system during the sample period,<sup>20</sup> nor including parent-country fixed effects, are significant and thus do not affect our main inferences.

Second, some recent studies use a weighted tax rate differential rather than a maximum tax rate differential (e.g., Huizinga and Laeven 2008). We use the maximum tax rate differential as a control because theoretically, in a tax-efficient setting, all internal lending should be done by the affiliate with the lowest tax rate in order to minimize tax payments on generated internal interest income and to maximize the tax shield from internal debt. Hence, there should be only one internal bank (see Mintz and Smart 2004; Schindler and Schjelderup 2012). Similar arguments apply to the location of intellectual property that should be hosted in the lowest-tax affiliate in order to generate the maximum tax rate differential when user fees (e.g., royalties) are invoiced. Therefore, the maximum tax rate differential should control for tax incentives across affiliates, at least for internal debt and intangibles, whereas the weighted tax rate differential is geared towards transfer

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<sup>20</sup>These countries are Chile, Greece, Ireland, Israel, Japan, South Korea, Mexico, Poland, the U.K. and the U.S. Japan and the U.K. switched to a territorial system in 2009, outside our sample period.



pricing in tangible assets. For debt shifting, the arguments in favor of using the maximum tax rate differential in our tests are also in line with available empirical evidence. Møen et al. (2011) report evidence that a weighted tax rate differential, intended to capture external debt shifting (Huizinga et al. 2008), matters for external leverage, but not internal leverage.

Nevertheless, we re-estimate our empirical model using a weighted rather than the maximum tax rate differential. In the outgoing transfer payment regressions, we weight the tax rate differential by the total amount of transactions between the Norwegian affiliate and each foreign affiliate. In the internal debt regressions, we weight the tax rate differential by the total assets in each foreign affiliate. The coefficient on the weighted tax rate differential is insignificant, while our main inferences remain unchanged.

## V. CONCLUSION

This study examines multinational corporations' flexibility to adjust their income-shifting strategies during the tax year when an affiliate incurs losses. We develop arguments suggesting that flexibility in adjusting income shifting has important implications for behavior in achieving efficient tax reporting under losses. Under flexibility, MNCs can adjust their inter-affiliate payments ex post, i.e., before the end of the tax year but after observing profit or loss realization, to reduce worldwide taxable income. Without flexibility, MNCs have to decide ex ante on their income-shifting strategies and cannot revisit these decisions once they are taken. Hence, affiliates of inflexible MNCs will feature precautionary income-shifting behavior, even if the affiliates are profitable ex post.

According to our empirical estimation using detailed tax return data on Norwegian multinational affiliates' transfer payments and internal leverage, we conclude that transfer prices provide MNCs with flexibility to adjust their income-shifting strategies ex post, while we cannot reject zero flexibility for internal leverage. We also find that transfer pricing related to user fees, including intangibles, drives most of the flexibility. Nevertheless, we continue to caution that our sample sizes are small and include small and medium-sized Norwegian affiliates that may not generalize to other settings. However, our sensitivity tests are consistent with changes in transfer prices for loss affiliates of medium-to-large size, rather than underlying poor affiliate performance, weak customer demand, or small affiliates explaining our results.

Our findings have direct implications for income shifting studies that omit loss making affiliates. Standard models implicitly assume full flexibility to shift income ex post. However, as long as an affiliate has a positive probability of incurring a loss in a particular year, and the flexibility to adjust income-shifting strategies at the end of the same year is at least somewhat limited, precautionary behavior suggests that the tax sensitivity explaining income shifting will be higher than predicted by standard models. Our empirical

results suggest that while there is some flexibility to change income-shifting strategies in response to current losses, the flexibility is certainly limited, in particular for leverage. This result suggests that, in response to tax rate changes, more income shifting may be occurring than traditional studies suggest, especially in the case of internal debt shifting where flexibility to shift income ex post is limited.

While most of the existing empirical work investigates income shifting of profitable affiliates to low-tax countries, income shifting by unprofitable non-haven affiliates has escaped the attention of most researchers and policymakers. Namely, understanding and regulating MNCs' incentives to adjust income shifting largely overlooks the scenario of MNCs' flexibility in shifting income by non-haven affiliates with operating losses. Therefore, tax authorities and policymakers (e.g., OECD 2013) should increase their focus on payments to non-haven affiliates that disclose operating losses.



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# Appendices

## A. DESCRIPTIVE STATISTICS FOR USER FEES

	Mean	Standard deviation	p01	p25	p50	p75	p99
<u>Relative importance of user fees:</u>							
Transactions of user fees as percent of total transactions	51.61	47.94	0	0	46.21	100	100
<u>Components' transaction as percent of total user-fee transactions:</u>							
<u>Outgoing transactions</u>							
Royalties	9.90	29.97	0	0	0	100	100
Rents	4.80	21.12	0	0	0	0	100
Licenses	85.30	35.32	0	100	100	100	100
<u>Incoming transactions</u>							
Royalties	24.40	41.36	0	0	0	75.00	100
Rents	8.10	26.39	0	0	0	0	100
Licenses	67.50	44.78	0	8.33	100	100	100

This table reports descriptive statistics for annual transactions of user fees and their components, based on our main sample of Norwegian daughter (subsidiary) companies with non-zero transfer payments ( $N = 128$ ). Note that the tangible category only consists of the costs of material. See Appendix B for full variable definitions.

## B. DEFINITION OF VARIABLES

### Dependent variables<sup>a</sup>

Net outgoing transfer payments	The net outgoing transfer payments to royalties, license fees, user fees, and purchases, standardized by mean total assets over the sample period in order to adjust for size.
Net outgoing transfer payments for user fees	The net outgoing transfer payments to royalties, license fees and user fees, standardized by the mean total assets over the sample period in order to adjust for size.
Net outgoing transfer payments for tangible goods	The net outgoing transfer payments for purchases (cost of materials), standardized by mean total assets over the sample period in order to adjust for size.

Total internal leverage Total internal debt divided by mean total assets.

### Explanatory variables<sup>b</sup>

Loss position indicator	A dummy equal to 1 if an affiliate runs a loss in year $t$ , zero otherwise.
Loss position at $t$ , but profitable abroad <sup>c</sup>	A dummy equal to 1 if an affiliate runs a loss in year $t$ , but has transactions with at least one profitable non-Norwegian affiliate, zero otherwise.
Loss position at $t$ and $t - 1$	A dummy equal to 1 if an affiliate runs a loss in both year $t$ and $t - 1$ , zero otherwise.
Pre-tax income	The affiliate's taxable income (result) as percent of total assets.
Maximum tax rate differential <sup>d</sup>	The Norwegian business tax rate (28%) less the tax rate for the affiliate with the lowest tax rate.
Log of total assets	The natural logarithm of the affiliate's total assets (in 1,000 NOK).
Log of employment	The natural logarithm of the affiliate's number of employees, measured in full-time positions.
Interest-bearing debt as percent of total assets	Total debt that pays a positive interest rate as percent of total assets.
Fixed assets as percent of total assets	The amount of fixed assets as percent of total assets.
Company age (in years)	The age of the entity, measured as year $t$ minus the founding year.

Loss carryforward	Aggregated loss carryforward as percent of pre-tax income.
Profitable affiliate abroad indicator <sup>e</sup>	A dummy equal to one if we observe at least one profitable foreign affiliate in the MNC group.
Weighted average tax differential <sup>f</sup>	A variable that constructs an average tax differential by weighting the tax differential to each country with the volume of transfer payments (internal debt) a Norwegian affiliate has with that country, using the formula $(\bar{t} - t_N) = \sum_i w_i \cdot (t_i - t_N)$ , where $w_i$ is the volume of transfer payments (internal debt) of a Norwegian affiliate to (owed to) country $i$ relative to all cross-border transfer payments (total internal debt) of this affiliate, $t_i$ is the statutory tax rate of country $i$ , and $t_N$ is the statutory tax rate of Norway.

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<sup>a</sup> Data source for all dependent variables is the form ‘Utenlandsoppgaven’ provided by Skattedirektoratet.

<sup>b</sup> Data source for all explanatory variables is Dun&Bradstreet, except noted otherwise.

<sup>c</sup> This variables combines information from Skattedirektoratet and Dun&Bradstreet.

<sup>d</sup> The tax rates are collected from the International Bureau of Fiscal Documentation and ministries in different countries. We are grateful to Julia T. Bakke for sharing these data with us.

<sup>e</sup> This information stems from the form ‘Utenlandsoppgaven’ provided by Skattedirektoratet.

<sup>f</sup> This information stems from the form ‘Utenlandsoppgaven’ provided by Skattedirektoratet; the tax rates come from the International Bureau of Fiscal Documentation and ministries in different countries.

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**Table 1:** Descriptive statistics.

Panel A: Descriptive statistics for main regression sample ( $N = 128$ ).							
	Mean	Standard- deviation	p01	p25	p50	p75	p99
<u>Dependent variables:</u>							
Net outgoing transfer payments (in percent of mean total assets)	3.00	18.15	-23.59	-4.20	-0.55	3.46	51.01
Total internal leverage (in percent of mean total assets)	11.52	21.57	0	0	0.96	9.30	85.58
Net outgoing user fees (in percent of mean total assets)	2.60	9.68	-5.15	-0.50	0	0.17	31.64
Net outgoing tangibles (in percent of mean total assets)	-0.90	8.34	-19.84	-1.86	0	0	16.75
<u>Explanatory variables:</u>							
Loss position indicator	0.30	0.46	0	0	0	1	1
Loss position at time $t$ , but profitable abroad	0.22	0.42	0	0	0	0	1
Losses both at time $t$ and $t - 1$	0.19	0.39	0	0	0	0	1
Pre-tax income (in 1,000 NOK 2005)	61,541	187,237	-133,348	-3,317	6,922	57,786	1,089,606
Maximum tax rate differential	0.013	0.073	-0.11	-0.02	0	0.04	0.21
Total assets (in 1,000 NOK 2005)	779,158	1,428,168	4,220	94,296	263,354	708,939	6,029,076
Number of employees	125,39	170,29	0	5	42	157	600
Total interest-bearing debt (in percent of total assets)	27.26	38.66	0	0.51	15.35	41.93	91.48
Fixed assets (in percent of total assets)	7.67	13.23	0	0	0.81	9.56	57.11
Company age	13.75	14.14	1	5	8	12	77
Loss carryforward (in percent of pre-tax income)	12.28	90.72	-233.85	0	0	3.35	256.36
Profitable affiliate abroad indicator	0.84	0.37	0	1	1	1	1
Panel B: Number of observations in each year for the main regressions [number of obs. in loss position in brackets].							
	1999	16	[7]				
	2000	20	[6]				
	2001	21	[7]				
	2002	16	[4]				
	2003	19	[8]				
	2004	28	[5]				
	2005	8	[2]				
		= 128	= [39]				

This table reports descriptive statistics for our main regression sample of Norwegian daughter (subsidiary) companies with non-zero transfer payments. This sample contains  $N = 128$  observations. The numbers for total internal leverage are based on  $N = 118$  observations, because observations with leverage (debt-to-asset ratio) larger than 100% have been excluded. Panel A reports mean values, standard deviations and percentile values. Pre-tax income, total assets, and loss carryforward are winsorized at the 1 percent level. Panel B reports the total number of observations and loss observations (in brackets) by year. Note that the year 1998 is in the data, but outside the regression sample, as we use these observations for lagged variables. See Appendix B for full variable definitions.

**Table 2: Estimation of flexibility in transfer payments.**

	(A)		(B)		(C)		(D)		(E)		(F)	
	Main regression sample		Main regression sample		Main regression sample		Main regression sample		All observations		All observations	
	Net outgoing transfers	Net outgoing transfers	Net outgoing transfers	Net outgoing transfers	Net outgoing user fees	Net outgoing tangibles	Net outgoing transfers	Net outgoing transfers	Net outgoing transfers	Net outgoing transfers	Net outgoing transfers	Net outgoing transfers
Loss position at time $t$	-12.16* (6.512)	-10.72* (5.655)	-6.530* (3.263)	-2.698 (4.836)	-2.698 (4.836)	-2.698 (4.836)	-2.655** (1.201)	-1.654* (0.924)				
Loss position at time $t - 1$	-1.955 (3.802)	-2.122 (3.511)	-2.347 (1.690)	0.016 (2.591)	0.016 (2.591)	0.016 (2.591)	-1.049 (0.771)	-0.420 (0.604)				
Loss position both at $t$ and $t - 1$	2.327 (6.120)	3.138 (5.593)	1.432 (1.940)	1.799 (4.225)	1.799 (4.225)	1.799 (4.225)	0.377 (1.099)	0.220 (0.879)				
Lagged transfer payment		0.270*** (0.101)	0.437*** (0.051)	0.018 (0.082)	0.018 (0.082)	0.018 (0.082)		0.685*** (0.107)				
Pre-tax income as percent of total assets	-0.012 (0.124)	0.016 (0.121)	-0.118** (0.057)	0.094 (0.065)	0.094 (0.065)	0.094 (0.065)	-0.013 (0.016)	0.0002 (0.012)				
Maximum tax rate differential	39.17* (21.22)	26.89 (21.10)	12.93 (9.899)	5.086 (15.29)	5.086 (15.29)	5.086 (15.29)	6.639 (8.421)	2.162 (3.763)				
Log of total assets	-6.105** (2.805)	-4.759* (2.684)	-1.322 (0.812)	-0.547 (1.818)	-0.547 (1.818)	-0.547 (1.818)	-0.876 (0.624)	-0.521* (0.296)				
Log of employment	-0.531 (0.876)	-0.643 (0.826)	0.741** (0.311)	-1.016 (0.649)	-1.016 (0.649)	-1.016 (0.649)	0.329 (0.407)	0.179 (0.172)				
Total interest-bearing debt as percent of total assets	-0.015 (0.039)	-0.0006 (0.036)	-0.035 (0.022)	0.044 (0.027)	0.044 (0.027)	0.044 (0.027)	-0.010 (0.014)	-0.004 (0.008)				
Fixed assets as percent of total assets	-0.229 (0.153)	-0.154 (0.149)	-0.069 (0.061)	0.053 (0.101)	0.053 (0.101)	0.053 (0.101)	0.031 (0.035)	0.029 (0.035)				
Company age	0.041 (0.098)	0.051 (0.096)	0.080 (0.109)	0.066 (0.063)	0.066 (0.063)	0.066 (0.063)	-0.02 (0.056)	-0.010 (0.032)				
Loss-carryforward as percent of pre-tax income	-0.030 (0.020)	-0.028 (0.021)	-0.017** (0.007)	-0.002 (0.019)	-0.002 (0.019)	-0.002 (0.019)	-0.002 (0.004)	-0.0004 (0.005)				
Observations	128	128	128	128	128	128	604	604				
R-squared	0.727	0.743	0.602	0.477	0.602	0.477	0.216	0.444				

This table reports the results of estimating OLS regressions of transfer payments using Eq. (3). Columns (A) to (D) use all Norwegian daughter (subsidiary) companies with non-zero transfer payments. Columns (E) and (F) use all Norwegian daughter (subsidiary) companies. The transfer payment dependent variables are reported along the top of each column. The variable of interest is Loss position at time  $t$ , calculated as an indicator equal to one if the affiliate reported a loss for the period; zero otherwise. A constant term and year and industry dummies (not reported) are included in all regressions. The transfer payments are standardized as a percent of the affiliate's average total assets over the sample period (1998-2005) and winsorized at the 1 percent level. \*, \*\*, and \*\*\* denote statistical significance levels of  $p < 0.10$ ,  $0.05$ , and  $0.01$ , respectively (two-tailed). Reported t-statistics are based on robust standard errors clustered by affiliate. See Appendix B for full variable definitions.

**Table 3:** Estimation of flexibility in internal leverage.

	(A)	(B)	(C)	(D)
	Main regression sample		All observations	
	Total internal leverage	Total internal leverage	Total internal leverage	Total internal leverage
Loss position at time $t$	-11.31 (10.29)	-8.775 (9.528)	-0.625 (2.478)	0.744 (2.099)
Loss position at time $t - 1$	-1.213 (6.603)	-5.179 (5.208)	0.243 (2.175)	-0.241 (1.413)
Loss position both at $t$ and $t - 1$	-10.44 (11.76)	2.807 (9.908)	-4.145 (3.777)	-3.422 (3.188)
Lagged total internal leverage		0.850*** (0.147)		0.725*** (0.153)
Pre-tax income as percent of total assets	-0.110 (0.156)	-0.020 (0.127)	-0.035** (0.016)	-0.014 (0.013)
Maximum tax rate differential	7.033 (28.74)	12.39 (18.85)	-4.394 (10.75)	-3.965 (7.347)
Log of total assets	-7.106** (2.725)	-5.385** (2.211)	0.098 (0.601)	0.186 (0.380)
Log of employment	0.800 (1.461)	0.356 (1.074)	-0.337 (0.444)	-0.206 (0.315)
Fixed assets as percent of total assets	-0.589** (0.197)	-0.325** (0.138)	-0.138** (0.059)	-0.098** (0.048)
Company age	-0.178 (0.125)	-0.125 (0.094)	-0.063 (0.056)	-0.049 (0.039)
Loss-carryforward as percent of pre-tax income	-0.053 (0.046)	-0.019 (0.032)	-0.004 (0.009)	-0.0009 (0.009)
Observations	118	118	580	580
R-squared	0.556	0.698	0.226	0.417

This table reports the results of estimating OLS regressions of total internal leverage using Eq. (3). Columns (A) and (B) use Norwegian daughter companies with non-zero transfer payments only. Columns (C) and (D) use all Norwegian daughter (subsidiary) companies. The variable of interest is Loss position at time  $t$ , calculated as an indicator equal to one if the affiliate reported a loss for the period; zero otherwise. A constant term and year and industry dummies (not reported) are included in all regressions. Internal leverage is calculated as debt standardized as a percent of the affiliate's average total assets over the sample period (1998-2005) and winsorized at the 1 percent level. \*, \*\*, and \*\*\* denote statistical significance levels of  $p < 0.10$ , 0.05, and 0.01, respectively (two-tailed). Reported t-statistics are based on robust standard errors clustered by affiliate. See Appendix B for full variable definitions.

**Table 4: Estimations controlling for performance and size issues.**

	Sales revenues		Employment		PP&E		Adjusted cost of materials	
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
Loss position at time $t$	-2.668*	-4.118	-2.967**	1.605	-2.649*	-0.464	-3.530*	-2.953
	(1.588)	(2.644)	(1.440)	(3.117)	(1.509)	(3.095)	(1.891)	(3.111)
Loss position at time $t - 1$	0.475	-2.738	-1.349	0.439	-0.258	1.663	-0.457	2.396
	(0.984)	(2.317)	(1.033)	(1.963)	(0.969)	(3.052)	(0.899)	(2.382)
Loss position both	-0.0607	0.114	1.362	-5.858*	0.0667	-5.613	1.268	-5.581
at $t$ and $t - 1$	(1.575)	(3.254)	(1.425)	(3.514)	(1.340)	(4.801)	(1.396)	(3.918)
controls	(yes)	(yes)	(yes)	(yes)	(yes)	(yes)	(yes)	(yes)
Observations	385 (79)	364 (70)	381 (78)	359 (70)	388 (74)	370 (68)	364 (77)	342 (69)
R-squared	0.214	0.379	0.241	0.275	0.207	0.276	0.195	0.281
Sample	No reduction in sales revenue	No reduction in sales revenue	No reduction in employment	No reduction in employment	No reduction in PP&E	No reduction in PP&E	No reduction in adjusted cost of materials	No reduction in adjusted cost of materials

  

	Total assets		Total sales		Employment	
	(A)	(B)	(C)	(D)	(E)	(F)
Loss position at time $t$	-3.953**	-1.364	-5.277**	-0.207	-6.030*	-3.667
	(1.848)	(3.846)	(2.446)	(4.472)	(3.269)	(5.518)
Loss position at time $t - 1$	-1.130	-0.276	-0.622	2.073	-0.747	-1.464
	(1.047)	(3.140)	(1.414)	(3.732)	(2.316)	(5.214)
Loss position both	-0.392	-4.495	-1.299	-4.426	-0.293	1.431
at $t$ and $t - 1$	(1.890)	(5.698)	(2.418)	(6.857)	(3.302)	(8.277)
controls	(yes)	(yes)	(yes)	(yes)	(yes)	(yes)
Observations	416 (111)	403 (104)	306 (86)	299 (81)	175 (52)	170 (47)
R-squared	0.270	0.262	0.430	0.214	0.532	0.333
Sample	Mean total assets larger than 65m NOK (\$10m USD)	Mean total assets larger than 65m NOK (\$10m USD)	Mean total sales larger than 65m NOK (\$10m USD)	Mean total sales larger than 65m NOK (\$10m USD)	Mean number of employees larger than 100	Mean number of employees larger than 100

Panel A reports the results of estimating OLS regressions of transfer payments and internal leverage using Eq. (3) on only Norwegian daughter (subsidiary) companies that, from period  $t - 1$  to period  $t$ , do not feature a decrease in sales revenue (columns A and B), employment (columns C and D), property, plant and equipment (columns E and F), and adjusted cost of materials (columns G and H). Adjusted cost of materials is calculated as total cost of materials minus outgoing transfers on cost of materials to related affiliates abroad. Panel B reports results from estimating Eq. (3) for affiliates with mean total assets larger than 65m NOK, or \$10m USD using 2005 exchange rates (columns A and B), mean total income above 65m NOK (columns C and D), and mean number of employees above 100 (columns E and F). The regressions for transfers and internal leverage augment the specifications in Table 2 Column (E) and Table 3 Column (C), respectively. In both panels, we report the number of all observations used in a regression and give the number of observations with non-zero transfer payments in parentheses. A constant term, control variables, and year and industry dummies (not reported) are included in all regressions. The transfer payments and debt are standardized as a percent of the affiliate's average total assets over the sample period (1998-2005) and winsorized at the 1 percent level. \*, \*\*, and \*\*\* denote statistical significance levels of  $p < 0.10$ , 0.05, and 0.01, respectively (two-tailed). Reported t-statistics are based on robust standard errors clustered by affiliate. See Appendix B for full variable definitions.

**Table 5:** Estimations controlling for profitability and solvency issues.

Panel A: Sub-samples with measures for profitability abroad and solvency issues				
	(A)	(B)	(C)	(D)
	Net outgoing transfers	Total internal leverage	Net outgoing transfers	Total internal leverage
Loss position at time $t$	-0.879 (0.884)	1.436 (2.105)	-4.952* (2.556)	-6.419 (3.877)
Loss position at time $t$ , but profitable abroad	-3.453* (1.849)	-2.803 (2.338)		
Loss position at time $t - 1$	-0.796 (0.724)	1.321 (2.089)	-1.913 (1.422)	-4.039 (2.961)
Loss position both at $t$ and $t - 1$	0.130 (1.082)	-4.375 (3.375)	1.284 (1.643)	0.812 (4.711)
Profitable affiliate abroad indicator controls	2.734* (1.628) (yes)	9.589*** (1.845) (yes)		
Observations	604 (128)	580 (118)	302 (87)	291 (81)
R-squared	0.231	0.291	0.277	0.358
Companies excluded		None	Below median working capital	

  

Panel B: Sub-samples with exclusion of persistent losses				
	(A)	(B)	(C)	(D)
	Net outgoing transfers	Total internal leverage	Net outgoing transfers	Total internal leverage
Loss position at time $t$	-2.829** (1.347)	-0.335 (2.487)	-2.684* (1.420)	-0.481 (2.645)
Loss position at time $t - 1$	-0.905 (0.767)	0.0852 (2.216)	-0.219 (0.734)	0.734 (2.347)
Loss position both at $t$ and $t - 1$ controls	-0.0590 (1.131) (yes)	-3.936 (3.933) (yes)	-1.054 (1.193) (yes)	-3.532 (4.184) (yes)
Observations	568 (126)	546 (116)	500 (109)	481 (100)
R-squared	0.228	0.230	0.258	0.230
Companies excluded		Loss in all years	Loss in at least 75% of years	

Panel A reports the results of estimating OLS regressions of transfer payments and internal leverage using Eq. (3) on all Norwegian daughter (subsidiary) companies after including controls for whether there is at least one profitable affiliate abroad, and its interaction with the Loss position indicator at time  $t$  (Columns A and B); and after eliminating firms with potential solvency problems, or below-median working capital (Columns C and D). Panel B reports results using all Norwegian daughter (subsidiary) companies that do not experience persistent losses. The criterion for persistent losses in Columns (A) and (B) (Columns C and D) is whether the affiliate has a loss in all years (75% of the years) it appears in the sample. The regressions for transfers and internal leverage augment the specifications in Table 2 Column (E) and Table 3 Column (C), respectively. In both panels, we report the number of all observations used in a regression and give the number of observations with non-zero transfer payments in parentheses. A constant term, the control variables, and year and industry dummies (not reported) are included in all regressions. The transfer payments and debt are standardized as a percent of the affiliate's average total assets over the sample period (1998-2005) and winsorized at the 1 percent level. \*, \*\*, and \*\*\* denote statistical significance levels of  $p < 0.10$ , 0.05, and 0.01, respectively (two-tailed). Reported t-statistics are based on robust standard errors clustered by affiliate. See Appendix B for full variable definitions.