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Tax revenue losses through cross-border loss offset: An insurmountable hurdle for formula apportionment?☆

Mohammed Mardan[a,*], Michael Stimmelmayr[b]

[a] Department of Management, Technology and Economics, ETH Zurich and NoCeT Zürich, Leonhardstrasse 21, CH-8092 Switzerland
[b] Department of Management, Technology and Economics, ETH Zurich and CESifo Zürich, Leonhardstrasse 21, CH-8092 Switzerland

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ABSTRACT

This paper analyzes the relevance of firm losses for tax revenues and welfare when switching from separate accounting to a system of tax base consolidation with formula apportionment. We find that a system change unambiguously decreases tax revenues in the short run, in which neither firms nor governments can adjust their behavior, due to the cross-border loss offset inherent in formula apportionment. In the medium run, in which only firms can adjust their strategies, tax revenues are still lower under formula apportionment if the probability of incurring losses or the costs of profit shifting are sufficiently small. However, in the long run, where firms and governments can adjust their behavior, a switch from separate accounting to formula apportionment is beneficial under the aforementioned conditions. Furthermore, we show that a higher weight on input shares in the apportionment formula may mitigate tax competition and thus increase tax revenues because, contrary to output factors, input factors provide a backstop against a shortfall of tax revenues due to loss-making subsidiaries.

1. Introduction

In October 2016, the European Commission (EC) proposed another set of Directives pushing forward unitary tax rules for business operations across the European Union (EU).[1] If adopted, a common corporate tax base (CCTB) becomes mandatory, as of January 2019, for EU companies belonging to a group with a consolidated turnover exceeding EUR 750 million. In a second step, the cross-border consolidation of profits and losses will become mandatory from January 2021 onwards, transforming the CCTB into a common consolidated corporate tax base (CCCTB) with formula apportionment of taxable group profits to member states based on three equally weighted factors comprising labor (number of employees and payroll costs), tangible fixed assets, and sales. The rationale for the two-step approach lies in the opposition of several EU member states

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* Corresponding author.
E-mail addresses: mardan@kof.ethz.ch (M. Mardan), stimmelmayr@kof.ethz.ch (M. Stimmelmayr).

[1] In 2001, the Commission presented a first communique proposing the switch from separate accounting to a system where multinational firms' profits are consolidated and apportioned to each taxing country based on a formula; in 2011 a Directive on an EU-wide common consolidated corporate tax base was put forward (see European Commission, 2001 and 2011). Council debates proved that the adoption of the latter Directive has become unlikely, forcing the launch of the 2016 Directives.

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against the consolidation matter as stipulated in the 2011 Directive. The consolidation of cross-border profits and losses is, on the one hand, seen as an enormous step towards the elimination of a major obstacle of cross-border business activities.[2] On the other hand, the significance of loss-making affiliates suggests substantial negative tax revenue consequences (see Fuest et al., 2007; Cobham and Loretz, 2014) and thus a potentially insurmountable hurdle for the implementation of the CCCTB.

In this paper, we analyze the tax revenue and welfare consequences of losses on the governments' decision to switch from a system of separate accounting (SA) to formula apportionment (FA), where, in line with the EC's approach, consolidation of tax bases is mandatory for the MNE.[3] We set up a two-country model, where each of the two countries hosts one production site, i.e. a subsidiary of a representative multinational enterprise (MNE). One of the two subsidiaries owns an intangible asset which is required for production and licensed for a fee to the subsidiary in the other country. The MNE decides on the size of a risky investment in each subsidiary (location) and the optimal transfer price for the intangible asset. A failure of the risky investment results in zero output and thus in losses for that subsidiary. Governments in each country maximize tax revenues by non-cooperatively setting their tax rates. By analyzing the implications of losses for a government's decision to favor a system of SA over FA and vice versa, the paper contributes to the understanding of the relevance of MNE losses for government behavior. Despite the widespread and empirically well-documented phenomena of loss-making affiliates, the implications of losses have so far received only limited attention in theoretical papers.[4]

Instead of deriving tax externalities to draw conclusions about the efficiency of fiscal competition, as is common in the prior literature, we analyze in detail the tax revenues and welfare consequences originating from the switch to a different corporate tax system. In the analysis, we separate the behavioral adjustments of the MNE and the government in response to a switch from SA to FA from the effect of tax base consolidation by analyzing three different scenarios. In the short-run analysis, neither the MNE nor the government is able to adjust its behavior following the system switch. In the medium run, only the MNE is able to alter its strategies while the government continues to impose the same tax rate as it did under SA. In the long run, also the government responds to the change in the tax system by adjusting its tax rate. This is in line with the EC's approach that member states will retain discretion over their tax rate policy. This approach proves helpful to disentangle the pure tax base effect due to the loss offset opportunity under FA from behavioral adjustments of the MNE and the governments.

We show that, in a symmetric equilibrium, tax revenues unambiguously decrease in the short run after a switch from SA to FA. Specifically, the feature of corporate tax base consolidation under FA reduces tax revenues due to the immediate offset of cross-border losses. This finding confirms the empirical studies by Fuest et al. (2007) and Cobham and Loretz (2014), which analyze the tax base consequences resulting from a cross-border loss offset when switching from SA to FA.

Taking the above studies as a benchmark when deciding on the introduction of a CCCTB with an FA system in Europe can result in rash policy recommendations because they neglect behavioral adjustments by firms and the tax policy consequence of governments. In the medium run, when the MNE is able to adjust its investment decisions to the new tax rules, the negative revenue consequences attested in the short run still prevail if the probability of incurring losses or the MNE's costs of profit shifting are small. Under these conditions, the level of investments is already high under SA and the increase in investments stimulated by the loss-offset provision when switching from SA to FA is insufficient to ensure higher tax revenues under FA.

Yet, this changes in the long-run scenario. When governments also respond to the switch from SA to FA, tax revenues are larger under FA if the probability of success is at least moderately high and the MNE's costs of profit shifting are small – requirements which most likely reflect real world conditions. Thus, our analysis proves relevant for policy makers by highlighting not only the already known short-run consequences but, importantly, also informing about the medium- and long-run consequences when switching from a system of SA to FA which have not yet been captured in prior, purely empirical works. Especially, the fact that the conditions for ensuring larger tax revenues under FA are qualitatively polar in the medium versus the long run indicate that there will be a transitional period of tax revenue losses until the benefits of a system switch from SA to FA fully materialize.

Our analysis also provides insights into the role of the apportionment factor weights for the intensity of tax competition and the consequences for tax revenues once governments have decided to switch from SA to FA. The potential of incurring losses creates a qualitative difference between input and output factors in the apportionment formula. In case a subsidiary fails, the output share in that country drops to zero which magnifies the relevance of the input shares in the formula for apportioning the consolidated tax base. We show that a higher weight on input shares has two opposing effects on tax competition. First, tax competition is aggravated because the MNE may more easily manipulate input shares than output shares in the formula. Second, a high input share acts as a backstop against the shortfall of tax revenues when hosting an unsuccessful subsidiary. Despite the zero output of the failing subsidiary, governments still collect some tax revenues as long as consolidated corporate profits are positive. The formula driven re-allocation of the tax base incentivizes governments

[2] A fundamental motive for the European Commission to propose a move towards formula apportionment is based on the fact that "the limited availability of cross-border loss relief is one of the most significant obstacles to cross-border business activity" (European Commission, 2006, p. 10).

[3] For an analysis in which firms may choose to be taxed under SA or FA, see Gresik (2016).

[4] Altshuler et al. (2011) document huge corporate losses in the U.S. context. Cooper and Knittel (2006) and Auerbach (2007) show that the problem of unused tax losses is quantitatively a highly important one. Ramb and Weichenrieder (2004) and Fuest et al. (2007) find a similar pattern for losses in the German context. See OECD (2011) for a more general discussion on corporate losses.