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Tax systems and multinational enterprises: an empirical investigation

by

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1 Motivation

The current European system of taxation of multinational enterprises (MNEs) is governed by the principle of Separate Accounting (SA). According to SA, each country taxes the profits of a MNE reported in that country. Under this system, MNEs have an incentive to shift profits to countries with low taxes by means of transfer prices. That is, a MNE can manipulate intra-firm trade prices in order to minimize overall tax payments. As a result of this income shifting activity, in a country with little real MNE activity the MNE may report high profits and vice versa. To counteract this behavior countries adopt so-called transfer pricing rules, i.e. rules that impute the real transfer prices. However, the implementation of these rules is, to put it midly, cumbersome, and their effectiveness in reducing transfer pricing is at least ineffective. This ineffectiveness has been documented in several empirical studies — for a survey of the literature, see Gresik (2001).

A more radical response to transfer pricing and other problems in the SA regime is the proposal for changing the system of taxation in Europe and adopting so-called Formula Apportionment (FA). Under a system with FA, each country taxes a share of a MNE's global MNE profits, with the computation of the share based on real activity measures such as sales, payroll, and assets. Using a US firm-level database, Shackelford and Slemrod (1998) showed that shifting to a tax system with FA would indeed increase the total tax payments of the MNEs in the US.

The empirical literature on the transfer pricing issue is based on data collected from corporate tax return files, and are therefore prone to problems of misinformation. That is, the data that multinationals report to tax authorities may have little to do with real or actual profit data. Admittedly, this is not a problem if the issue is only to show that MNEs *report* low (high) profits in high (low) tax countries (which is exactly what the above studies have done). However, if one wants to measure the extent of transfer pricing, i.e. how much the MNEs distort internal trade prices, the misinfomation problem becomes prevalent.

A recent paper by Bartlesman and Beetsma (2003) bypasses this problem by using a production function technique that allows for indirectly estimating the

real activity of MNEs in a number of OECD countries. Their real activity data are, however, sector specific which, indirectly, implies that the estimated sector's profits are taken to be the same as those of the sector's MNEs. Clearly, there is no reason for this to be the case. Their results are nonetheless quite interesting. They show that the extent of exploitation of transfer pricing is indeed large: a 1% increase in corporate taxes *reduces* revenues by 3%. Given the absence of a reliable firm-level real activity database, Bartelsman and Beetsma's (op.cit) study is undoubtedly a further step and a welcome contribution to the literature of MNEs' income shifting.

2 The current project

We have been allowed access to the IUI (The Research Institute of Industrial Economics, Stockhom) database on Swedish MNEs.[1] It is a database of 150 Swedish MNEs reporting real activity in both parrent and affiliate companies in 8 surveys in the period 1965-2001. Its unique panel data set has been used extensively in testing the Knowledge Capital model of multinational activity, as presented compehensively in Markusen (2002). However, to date, there is no study that uses this database for testing the tax-related behaviour of MNEs.

We imagine that the IUI database can be used for three projects:

1. **The Extent of Transfer Pricing under Separate Accounting (SA):** Here we intend to repeat the Bartlesman and Beetsma (2003) exercise with firm-level data. That is, estimate the profits of the parent and affiliated firms by using a production function technique, where the choice of factor inputs uncovers the true economic rent that the firm earns, and then regress these profits on the statutory tax rates in the different countries. In this way, the firm's profits are neither taken to be the reported ones (as in the papers surveyed by Gresik, op.cit.), nor the entire sector's profits (as in Bartlesman and Beetsma, op.cit.), but are instead gauged from the MNE's own use of factor inputs.[2] The policy relevance of such an exercise is to uncover the real extent of MNEs' income shifting that takes place in the SA taxing system. Using firm-level data to such an issue is not seen before in the literature.

2. **The Tax Revenue Effects of Applying Formula Apportionment (FA):** Having real activity data for the Swedish MNEs, one can repeat the Shackelford and Slemrod (1998) study. That is, if taxation of MNEs were to be based on FA and thus on measures on real activity in each country, how much would the MNE have to pay in tax to a given country? Clearly, such an exersice will only be valid for the short run, where firms have not adjusted their activity levels and capacity for tax minimizing purposes (see

[1] The IUI database is a confidential database, in the sense that one can only work on its data locally (on the IUI premises) and after IUI have approved of the project.

[2] Estimating the profit margin of a firm is also the theme in Roeger (1995) and Konings and Vandenbussche (2002).

Gordon and Wilson, 1986). The results of such an exercise will, however, uncover in which countries tax revenues would go up or down in the short run, and by how much. Further, the outcome might be used to lay out the incentives that EU countries currently have to adopt or not support the new FA tax system.

3. **Taxes and the enrty-exit decision of MNEs:** In the IUI data, MNE entities come and go; not all MNE affiliates are present in the relevant country throughout the entire data period. Hence, the implications and the causes of birth and death of companies must be considered. When estimating sector-level data, the births and deaths of companies within a given sector is probably of minor econometric importance. However, when empirical analyses apply firm-level data, the life cycle of firms must be dealt with more thoroughly. Births and deaths of firms are endogenous events, governed by market forces and by the economic environment. Part of the latter is taxation, and tax-related incentives to set up an affiliate of a MNE in a given country may stem from both (i) favorable tax treatment of the production outcome in the country; and (ii) the opportunities for shifting income into the country.[3] We aim at developing a theoretical framework which lays out in which way corporate income taxes affect the incentives to open (and close) new affiliates, stressing both angles. Further, we wish to examine in which way the data in the IUI database can shed light on the importance of tax factors for MNE's location decisions.

2.1 Method and time schedule

The empirical analysis will be carried out as a standard panel data analysis, possibly accounting for survey phenomena such as missing data and panel attrition; the secretariat of the IUI has a great deal of experience with the data set and will assist in the actual implementation of the estimation procedures, a convenient by-product of having to work on the data set in Stockholm. The proposed budget allows for some visits to Stockholm, as the first set of estimations can be subject to revision (for example as a consequence of journal reviews).

We reckon that the three projects described above will finish by 1/9/04. Our goal is to produce two to three journal papers adressing the above issues.

References

[1] Gresik, T., 2001, The Taxing Task of Taxing Transnationals, Journal of Economic Literature 39, 800-838.

[3] Devereux and Griffith (2002, 2003) introduce so-called effective average tax rates to measure how the corporate income tax affects firm location. However, their measure does not incorporate opportunities for transfer pricing.

[2] Bartlesman and Beetsma, 2003, Why pay more? Corporate tax avoidance through transfer pricing in OECD countries, *Journal of Public Economics*, forthcoming.

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[4] Devereux, M. and R. Griffith, 2003, Evaluating tax policy for location decisions, *International Tax and Public Finance* 10, 107-126.

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[9] Shackelford, D. and J. Slemrod, 1998, The Revenue Consequences of Using Formula Apportionment to Calculate U.S. and Foreign-Source Income: A Firm-Level Analysis, *International Tax and Public Finance* 5, 41-59.