The relationship between tax Incentives and MNE's patent behavior and implications for the real economic activity: Evidence from the Netherlands

Michael Polder
Statistics Netherlands
jm.polder@cbs.nl

Mark Vancauteren
Hasselt University
Statistics Netherlands
mark.vancauteren@uhasselt.be

Marcel van den Berg
Statistics Netherlands
m.r.vandenberg@cbs.nl

Abstract

It is well known that in a globalized economy, the role of intellectual property, like patents and R&D, have become a key driver to international competitive success as well as productivity. As part of industrial policy, many governments worldwide have indeed put innovation as a stimulus to growth at the forefront of their agenda, and provide fiscal incentives such as R&D tax credits and patent boxes.

Despite the sizable literature on the effectiveness of innovation-related tax incentives, the use of such tax incentives, in the context that IP related MNE profits can be segregated from ordinary profits across boundaries, raise the concern of policy makers about yet another tax device. For instance, one voice of such a concern is the discussion in the context of the OECD Base Erosion and Profit Shifting (BEPS) and at the EU Code of conduct on business taxation with the aim to align taxation with substantial "research" activity. As a result, one should be cautious in interpreting evidence on its effectiveness in view the possibility that it may be driven by a shift in innovation from one country to the other rather than an increase in overall innovation investments.

Empirically, the focus of the paper is to investigate the relationship between various measures of taxation and MNE's innovation activities. In particular we are interested to what extent innovative MNE pay less taxes and whether these firms take advantage of their tax credits in their real economic activity. The key methodological challenge in this relationship is to separate out the technological and real economic activity related perspective from the tax perspective. We proceed as follows. To test the existence of a direct channel between tax reductions and innovation, we employ different types of innovation data and several measures of tax avoidance. We consider a firm's patenting activity (patent count applications, patent technology fields and patent forward citations), its R&D expenditure (investments and personnel) as well as R&D tax reductions.

One major advantage of using patent applications is that the time of filing or applying for a patent coincides very closely with the time that innovative activities take place within a firm. For analytical purposes, this is an important feature because it allows us to incorporate important observed and unobserved heterogeneity (see for instance, Nagaoka et al., 2010). Furthermore, this data allows us to take into account that some technological solutions are likely to be of higher quality than others.

The combination of considering various subsample population characteristics with heterogeneity of a firm's technological endowment allows us to provide deeper insights on the reality of incentives and tax benefits for MNE innovation over a long period of time.

While the focus of the paper is to assess the direct relationship between a corporate's innovation on its taxation, the analysis does not only consider varying impacts that can be attributed by various measures of innovative behavior, where we sort out the intensity of technological inventions, but also considers various taxation measures. Here , we corroborate with ongoing research where we compute different empirical metrics that capture different aspects of a firm's tax corporate strategy (Gao et al., 2016; Desai and Dharmapala, 2009; Griffith et al., 2014). This include, amongst others, a corporate's effective tax rate. The effective tax pressure relates corporate taxes to *economic* profits of a corporation and is therefore an indication of the *real* tax pressure. This paper aims to compute the effective tax pressure of three types of enterprises: domestic multinationals, foreign multinationals active in the Netherlands and firms only active in the Netherlands. One major challenge is to sort out the fiscal profits from the real economic profits of these respective firm types. Within this framework, we will corroborate with ongoing research at our statistical division at Statistics Netherlands (CBS, 2017).

The paper's focus on the Netherlands provides an interesting case study because it is has put several tax incentive instruments in place to lower R&D and IP related innovation activities. Under the so called Dutch innovation box (originally introduced as Patent box), income from innovation is subject to lower effective tax rates. This regime can in essence be also applied to foreign companies who are operating internationally as well as to income derived from various types of intangible assets in the Netherlands or abroad. This accentuates the globalization issue as well as the key concern that a particular tax scheme must be associated with the real economic activity. In addition, the Dutch innovation tax treatment scheme has been subject to various policy shifts which provides a further incentive to look at large time horizon.

Data

Our data consist of a panel of patenting firms, situated in the Netherlands, during the period 2000-2015. We work with data that includes financial variables (available from SFO "Statistics Financial Enterprises", R&D expenditures (CIS and R&D surveys), patent application counts, forward citations of these counts, patent technology fields (PATSTAT database), R&D tax credits (WBSO, "Wet Bevordering Speur-en Ontwikkelingswerk"). The firms in our sample are group enterprises located in the Netherlands, but not necessarily the ultimate parent firm since foreign control is possible. The statistical unit "enterprise" is essential in the construction of a patent sample, because firms may register patents (and R&D) under different names. Generally speaking, the ownership of a patent occurs at the level of an enterprise and it is practically impossible to link this ownership to affiliates or plants. To determine, the MNE's characteristic of these enterprises we will clearly distinguish between three types of firms: domestic multinationals, foreign multinationals active in the Netherlands and firms only active in the Netherlands firms. Here we utilize data that is available from the Dutch general population register ("ABR: Algemeen Bedrijfsregister) that identifies the ultimate control of the firm. Due to an ongoing collaboration with Eurostat, Statistics Netherlands own new data, the European Register (EGR) that enables us to identify the ownership control between cross boundary enterprises within the EU. For an enterprise in the Netherlands, this means that we can therefore verify whether it has a daughter-, mother- or sister firm in a EU country.

References

CBS (2017), Ontwikkelingsprogramma Globalisering 2017, Note.

Desai, M. and D. Dharmapala (2009), Corporate tax avoidance and firm value, Review of Economics and Statistics, 91: 537-546.

Gao, L., Yang, L. and J. Zhang (2016), Corporate patents, R&D success, and tax avoidance, Review of Quantitative Finance, 47: 1063-1096.

Griffith, R., Miller, H. and M. O'Connell (2014), Ownership of intellectual property and corporate taxation, Journal of Public Economics 112: 12-23.

Nagaoka, S., Motohashi, K. and A. Goto (2010), Patent statistics as an innovation indicator, in B. Hall and N. Rosenberg (eds.): Handbook of the Economics of Innovation, Elsevier.