

## Base erosion and profit shifting in multinational corporations

**Vedang Ratan VATSA**  
MBA-Department of IME, IIT Kanpur, India  
vatsvedang@gmail.com

**Abstract.** *The subject of shifting of income by various MNCs or 'Base Erosion and Profit Sharing' (BEPS) motivated by tax reasons has been a matter of attention, globally, in the recent years. In this paper, I provided a literature review of what is known about the issue of BEPS in general and went forward in discussing the empirical approaches that identify shifting of income supported by some data sources and thus summarized the discussion using the same. One of the major observations from this review is that the intensity of BEPS in the recent studies, is smaller than what can be found in the studies done earlier. This manuscript talks about the ways to offer an approach to conceptualize the magnitude of BEPS. It finishes up by featuring the significance of existing economic, financial and legal frictions as limitations on BEPS and by examining the ways by which future research may demonstrate these constraints efficiently.*

**Keywords:** BEPS, profit sharing, base erosion in MNCs, taxation, multinational firms.

**JEL Classification:** F01.

## I. Introduction

The topic of taxation of MNCs or international taxation in general has as of late picked up a high amount of political prominence and attention. G20 leaders after having a meet at the city of Los Cabos, Mexico in the year 2012 furnished the statement “We reiterate the need to prevent base erosion and profit shifting and we will follow with attention the ongoing work of the OECD (Organization for Economic Cooperation and Development) in this area” (<http://www.telegraph.co.uk/finance/g20-summit/9343250/>). The issues encompassing BEPS were portrayed in one of the major OECD report in February 2013. Eventually, a plan of action on BEPS was created in July 2013, which comprised of 15 particular steps that are expected to encourage collaboration among the government bodies concerning the tax assessment of MNCs. The general point to cover is to ‘better align rights to tax with economic activity’.

While investigating these propositions, one of the important considerations is the level of BEPS activities by the MNCs. This manuscript gives an overview of the observations of income shifting within MNCs.

The study centers around the predominant approach based on the economic aspects of shifting of income, which goes back to Hines and Rice (1994). Different methodologies within the subject of economics are additionally reviewed, including strategies proposed by Dharmapala and Riedel (2013) and Dyreng and Markle (2013).

One of the major subjects that comes up is that a move from country level datasets to the firm-level microdata has enormously contributed to the validity of the measures of BEPS. In the recent literatures, the observed amount of BEPS is comparatively lesser than that found in the previous studies. An estimate, in light of the study of a meta regression by Heckemeyer and Overesch (2013), of elasticity of the income reported w.r.t. the rate of tax differential over nations is recorded to be 0.8. This involves a 10% increment in the difference of the rate of tax involving a subsidiary and its parent (for instance, in light of the fact that the rate of tax in company’s nation went down from 35% to 25%) would make the reported income before tax to increase by 8% (for instance, from \$1,000,000 to \$1,080,000).

The manuscript also reviews particular issues identifying with BEPS that have been the subject of various policy debates. Eventually, the manuscript looks to offer a system to investigate the size and estimation of BEPS and the implications involved. Specifically, while the evaluated size of BEPS is lesser than what was found in the earlier studies, it is, however, unclear whether it is to be seen as being 'huge' or 'little' for policy purposes. The findings additionally recommend the significance of present economic constraints as checks on BEPS.

## II. Background

The purpose of development of MLI was to quickly implement the measures related to the tax treaty, that were introduced under Actions 2, 6, 7 and 14 (hybrid mismatches, treaty abuse, permanent establishments and mutual agreement procedures respectively) of the BEPS project. In order to maximize the participation, MLI provides with flexibility to judge the parts of MLI to be adopted, rejected or to be modified, to the potential signatories.

To be specific, MLI allows the following jurisdictions:

- Choice w.r.t. the tax treaties that the MLI modifies (CTAs: Covered Tax Agreements).
- Alternatives to fulfil the minimum standards under the Actions 6 and 14 (treaty abuse and mutual agreement procedures respectively) of the BEPS project.
- Potential of opting out from certain provisions w.r.t. CTAs whether completely or partially.
- Ability to exert any optional provisions.

With signing of the same, each signatory deposited a record to the OECD that listed their CTAs along with their reservations w.r.t the provisions of MLI. After the completion of the ratification process (including the modification requests that may be asked), the signatories may decide their positions on MLI.

It can be observed that the taxpayers may need to work more closely and lay attention to the options that the countries made under the MLI. They need to calculate and consider the impact of MLI on their operations and thus, work on the policies to address the impact.

## III. Observations and methodologies: Literature review

The study by Hines and Rice (1994) is based on the observation that the income before tax of any company is the total of ‘true’ and ‘shifted’ incomes. The shifted income here, may either be positive or negative. True income includes that capital and the labor estimations and it is intended to reflect the overall work efficiency of the company. Shifted income, on the other hand, depends upon the tax structure of the country in which the company is based and can be set as per the value of the company. It is dependent upon the tax incentives of the country and determines the amount to be moved in or out of the company.

The approach according to Hines and Rice may be represented as:

$$\log \pi_i = \beta_0 + \beta_1 \tau_i + \beta_2 \log K_i + \beta_3 \log L_i + X_i \gamma + \varepsilon_i \quad (1)$$

where:

$\pi_i$  – profits earned by the MNC ‘i’.

The specification is taken to be log-linear in nature. It does not include loss-making companies in the sample.

$K_i$  – Company i’s capital inputs.

$L_i$  – Company  $i$ 's labor inputs.

$\beta_0$  – Constant.

$\beta_1$  – Extent of income shifts by any MNC ' $i$ '.

$X_i$  – Vector of additional affiliate-level controls.

$\tau_i$  – Tax incentive to shift profits into or out of affiliate ' $i$ '.

$\varepsilon_i$  – Error term.

With the use of Panel data (using different observations of the same company over different time values), we may use the previous equation as:

$$\log \pi_{it} = \beta_1 \tau_{it} + \beta_2 \log K_{it} + \beta_3 \log L_{it} + X_{it} \gamma + \mu_i + \delta_t + \varepsilon_{it} \quad (2)$$

where:

$\pi_{it}$  – profits earned by the MNC ' $i$ ' in the year ' $t$ '.

$\mu_i$  – Affiliate fixed effect.

$\delta_t$  – Year fixed effect.

$\tau_{it}$  – Tax incentive for the purpose of profit shifting w.r.t. company ' $i$ ' in the year ' $t$ '.

$K_i$  – Company  $i$ 's capital inputs.

$L_i$  – Company  $i$ 's labor inputs.

$\varepsilon_i$  – Error term.

$\beta_0$  – Constant.

$\beta_1$  – extent of income shifts by any MNC ' $i$ '.

The difference in tax values between a company ' $i$ ' and/or its parent or any sister company are due to the tax reforms or differences in the location/country of the company which is why it is not directly related to the company's choice but there is a possibility that the difference in corporate tax rate in a country, which will change the value of  $\tau_{it}$  may be related to the changes in the economic environment or the policies being implemented in the country that may affect the profits of company ' $i$ '.

Apart from the discussed approach used in the literature of BEPS, the other approaches include the usage of data from Compustat, on the working of US companies to analyze BEPS worldwide. Compustat was not able to offer information about each company, the aim was to verify if the US based multinational corporations shifted their profits from US to any of their foreign based subsidiaries or any such company for that matter. This includes finding a relation between the ratio of foreign income (without tax) to the measure of foreign sales, involving the foreign tax rate (which can be taken as an incentive to shift the income abroad).

There are, however, a few empirical issues that may rise of this approach. The income being shifted and the operations that increases the measure of foreign tax rate (FTR) are completely internal choices of the companies. It may not be possible to use difference in the tax rates as a source of external variation of the same, w.r.t. the calculations in the above equation (2) with company data. In case a company has a high orientation to work on the

tax planning mechanisms, it may operate in countries with lower tax which will lead to a lower value of FTR and transfer high income amount out from the country which may lead to a high value of Foreign Sales (FRoS). In this case, the high value of FRoS may be linked to low FTR values but not to the orientation of tax planning of the company, which may in turn, drive both the variables indirectly. To summarize, the BEPS estimate may thus be subjected to an upward bias.

In a study, even with the presence of this bias, Kemsley and Lang (1998) did not find any proof of shifting of income from USA from 1984-92.

In an extension of which, Klassen and Laplante (2012) worked on the analysis of panel data of the US companies with data of foreign income from 1988 to 2009. They tried to answer these by making use of variables from different years and taking an average of 5 year periods for the calculation of FTR.

Another development of this approach is found in the literature from Dyreng and Markle (2013). They included the fact that the allocation of sales of US based MNCs, between US based customers and non-US customers in the calculation of income shifting cannot be manipulated with the fixed location of the customers/clients and they went on arguing that there is a possibility of calculating the amount and direction of income shifting by making an analysis of the differences between the US based MNC's sales and considering the location of its sales and its earnings, based on this estimate. It relies on the fact that the location of the sales of any MNC cannot be manipulated and may not be linked with any income-shifting strategy.

A new approach was proposed by Dharmapala and Riedel (2013) to measure BEPS which considered the differential of tax rate between a country  $j$  and any other country where the MNC operate. According to it, the tax rate differential may encounter a change due to any external factor. Coefficient  $\beta_1$  is used to sense the profits of a company to such a change. The companies or affiliates that face a higher tax rate tend to act like a control group to take decisions of profit sharing or indirectly the operation of the internal capital flow which may increase the reported income of any affiliate of a company due to increase in the income of the parent company (Dharmapala and Riedel, 2013).

In both the above equations,  $\beta_1$  represents the percent change in the income before tax w.r.t. 1 percent change in  $\tau$ .

Further in the BEPS literature, Huizinga and Laeven (2008) used commercial databases, the most famous of which includes Amadeus and Orbis.

According to Bureau Van Dijk, 'Amadeus contains comprehensive information on around 21 million companies across Europe'.

Huizinga and Laeven (2008) made use of cross sectional company level data from Amadeus for around 1999 European companies in order to offer a regression similar to that

in the first equation by taking into account the measurement of  $\tau$  that includes the effect of tax rates for all the affiliates of a MNC. Thus, they estimated the elasticity of BEPS in those European companies, which came out to be 1.31. This means that a 10 percent increase in the incentive of tax by shifting of income to an affiliate 'i' of a company is related to 13.1 percent change in the income of that affiliate.

Comparing the elasticity of 2.25 estimated by Hines and Rice (1994), the number is smaller in the estimations done by Huizinga and Laeven (2008), which suggests that by controlling the country and industry specific unobserved factors may show an affect in the values of income before tax. Since then, the usage of panel data has been more prevalent in the literature.

Dischinger (2010) estimated the value of elasticity of European companies to be equal to 0.7 from 1995 to 2005, using the Amadeus database.

Lohse and Riedel (2013) used the panel data from 1999 to 2009 in the Amadeus database and estimated the value of elasticity = 0.4.

The table below shows the BEPS estimate values of different studies:

Study	Data source	Time period	Value of elasticity	10% dec. in the tax rate of a country is related to the inc. in income from \$100,000 to:
Hines and Rice, 1994	BEA	Cross sectional data - 1982	2.25	\$122,500
Huizinga and Laeven, 2008	Amadeus	Cross sectional data - 1999	1.31	\$113,100
Dischinger, 2010	Amadeus	Panel data from 1995 to 2005	0.7	\$107,000 <sup>[11]</sup> <sub>SEPs</sub>
Heckemeyer and Overesch, 2013	Many sources	Many sources	0.8	\$108,000 <sup>[11]</sup> <sub>SEPs</sub>
Lohse and Riedel, 2013	Amadeus	Panel data from 1999 to 2009	0.4	\$104,000

#### IV. Directions for future research

It emerges out from the study that the estimated value of BEPS is lower in the recent studies than that in the earlier studies. One of the activities related to the tac planning of MNCs focusses on the heterogeneity in apparent tax sophistication.

According to Desai, Foley and Hines (2003), in the year 1999, 59% of the USA based companies with operations in foreign countries, has affiliates in countries considered as a tax haven.

According to Dharmapala and Riedel (2013), in the Amadeus sample of study, 58% of affiliates had at least one affiliate in any non-European tax haven country and a large fraction do not have affiliates in any tax haven countries.

Mills, Erickson and Maydew (1998) used a data of 365 US companies and found that the expenditures related to tax planning tend to decrease as per the size of the firm. It raises the question that why don't more companies invest in the activities of tax planning when the expenditures on tax planning is found to generate higher rate of return. The question can be raised on the existing economic frictions and its connection as constraints on BEPS. Future research may try to model these frictions and may study its implications for the overall efficient structuring of the tax regime and propose reforms accordingly.

## Conclusion

The issue of BEPS attracts opportunities for understanding the cause for it and the ways in which it may be reformed. On the other hand, it has turned out to be considerably more essential to comprehend the discoveries of the empirical literature on base erosion and profit sharing. This manuscript surveys the empirical literature on the study of income sharing motivated by tax reasons, in various MNCs. The emphasis is laid upon the extent of BEPS that has been calculated in the studies. In the recent studies, the magnitude, however, has been found to be lesser than the calculated in the earlier studies. This manuscript brings to light the importance of existing economic frictions and its connection as constraints on BEPS. It also put forward the future research that may try to model these frictions and may study its implications for the overall efficient structuring of the tax regime and thus, propose reforms accordingly.

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