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BEPS Action 11: Improving the Analysis of BEPS

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This document provides general comments on the analysis of the scale and economic impact of BEPS (Section I) and a set of specific comments on individual indicators proposed by the OECD Discussion Draft *BEPS Action 11: Improving the Analysis of BEPS* (Section II). Section III provides responses to specific questions for consultation in relation to the proposed indicators to measure BEPS. Finally, we propose a mechanism design approach to measuring BEPS (Section IV).

I. General Comments

1. The analysis of the scale and economic impact of BEPS would benefit from a broader theory-based conceptual and methodological framework that would provide a benchmark for the interpretation of the empirical results and their implications.

2. Profit shifting by multinational firms may be linked to cross-border tax rate differentials as well as other *non-tax reasons*, including risk sharing, and operating of internal capital markets. In this context, it would be important to generate the *counterfactual* of the location of corporate profits without tax-related profit shifting.

3. The allocation of taxing rights on corporate income between countries under the current international arrangements is very challenging in the context of increased international integration of production and innovation. The competitiveness of firms depends increasingly on their intangible assets which are internationally mobile and are difficult to measure. Identifying where profits are generated is complex and difficult even conceptually. These features have implications on the robustness and interpretation of the proposed indicators to measure BEPS and empirical estimates of tax-motivated profit shifting.

II. Comments on Proposed Specific BEPS Indicators

4. As a general comment, the notion that presenting a range of indicators covers a problem in one sounds good in theory, but those proposed do not do this very well. In particular, several use "profit rates", i.e. sales/assets or the like. If this measure is problematic, which it certainly is, this will throw off multiple indicators in the same direction. Thus, the overall combination of indicators is an issue. We now detail issues specific to the individual indicators.

Indicator 1: Indicator of concentration of foreign direct investment

5. An important question to ask is what measure of foreign direct investment (FDI) to use: stocks vs. sales? Davies (2008) indicates that there is a difference in those two measures across countries, potentially reflecting differences in the sector makeup of the two with developing countries tending to have a higher stock/sales ratio (i.e. more capital intensive).

6. What about measuring FDI by employment/total employment? This too will tend to have a bias as there is a fixed employment component to a firm's operations. As such, in industries where firm operating sizes are small, these fixed aspects will have a larger role to play. Furthermore, it ignores the issue of outsourcing.

7. One key issue to consider is that, as very well documented, smaller countries will have more FDI relative to the size of the economy.

Indicator 2: High profit rates of low-taxed affiliates of top global MNEs

8. This indicator requires a constructed profit rate, something which is likely to suffer serious flaws. In particular, many of the factors influencing this indicator have a strong potential to bias the observed relationship between this profit rate and taxes.

9 The primary variable here is a measure of the profit rate, i.e. sales/assets. This is problematic on many fronts. First, it ignores sector variation not only across MNEs, but within a MNE. For example, consider a firm with a low-capital intensive headquarters and a high-capital intensive production affiliate. Then by definition, this will tend to inflate the profit rate in the headquarters.

10. Further, one would expect that if this indicator will be used by policy makers, that firms will begin to manipulate the determinants of it with the possibility of real economic inefficiencies (see Hines, 2010).

11. Herger and McCorriston (2014) show that up to 50% of cross-border mergers and acquisitions have no clear vertical or horizontal relationship between the target and acquiring firms. Therefore, to compare profit rates not only across sectors, but across parts of the firm that do not operate in tandem, is misleading.

12. Using something like sales as the indicator of economic activity is problematic on two fronts. First, sales will often have a strong local component. If the markets vary across countries this will affect sales and therefore the profit rate. There is an increasing body of literature indicating pricing to market activities (e.g. Bastos and Silva 2010; Manova and Zhang 2012). Second, sales will need to be large enough to cover the fixed cost of FDI (see Helpman, Melitz, and Yeaple 2004). This will introduce variation across countries/sectors/activities in the level of sales needed to make that worthwhile.

13. This measure does not account for risk. If location and activity decisions are endogenous, then one would expect that in riskier markets/activities, that the rate of return would necessarily be higher for the firm to engage in that location/activity.

14. Other possibilities such as employment and operating expenditures are also likely to be impacted by country/sector/activity variation in the productivity of workers (affecting employment and total payroll), local price levels (affecting wages and employment) and other local costs such as raw materials, utilities, and transport (affecting operating expenses).

15. Within multiproduct firms, one would expect the profit rate to vary by the extent that a given affiliates activities align with the firm's core competency (see Eckel and Neary 2010). This would thereby throw the measure off.

16. Firms use internal financing methods to influence management (see Stoughton and Talmor, 1994). This too will affect the profit rate for non-tax reasons.

Indicator 3: High profit rates of MNE affiliates in low-tax locations

17. First, this indicator relies on the profit rate measure, suffering from all of the above problems. Second, this instantly biases the indicator by focusing only on high profit rates in low tax locations, ignoring low profit rates in the same country and what is happening in high tax locations.

18. It is unclear how tax rates will be calculated. As effective rates will vary across firms due to their ability to utilize features of the tax system such as accelerated depreciation, R&D tax credits, and so forth, what may be a low tax country for one firm may not be so for another.

19. Furthermore, the low-tax designation is inherently comparative. Consider two firms, one in two countries with a 5% tax rate and one with an affiliate in a 5% tax rate country and another in a 25% tax rate location. In the first, should we consider that either of the affiliates are in a low-tax location? Arguably not as there is no reason for profit shifting in that case.

Indicator 4: Profit rates compare to effective tax rates for MNE domestic and foreign operations

20. Again, the use of profit rates suffers from numerous problems. Likewise, as above, there is no obvious way to construct effective tax rates and what is constructed will certainly be subject to firm manipulations. In particular, if different affiliates, engaged in different activities that can avail of differing tax write-offs (R&D credits for example), this will affect the comparison of affiliate ETRs even within the same firm.

21. It is unclear how one can hope to separate out domestic and foreign operations. In particular, when intangibles operate as a joint input (Markusen, 1984) even in the absence of trade, affiliates will be linked.

Indicator 5: Effective tax rates of MNEs compared to comparable domestic firms

22. Again, the effective tax rates (ETR) will likely vary even within a firm because of the different choices (such as investment and R&D) made by affiliates and the impact this has on their tax burden.

23. In particular, we know that multinationals are not average firms. A large body of literature shows that they do more R&D, are larger, are more productive, and are much more likely to import and export. In much of this literature (e.g. Helpman, Melitz, and Yeaple 2004), the point is that more productive firms choose to become multinationals. In this light, to compare a firm that made this choice to one that did not is to compare an innately more productive firm with a less productive one. As this difference is likely to lead to other different decisions (such as investment) it will lead to different ETRs across them. Therefore any such comparison is flawed.

Indicator 6: Concentration of royalty payments relative to R&D expenditures

24. R&D is inherently an uncertain activity. While presumably greater expenditures increase the likelihood of a successful, marketable innovation, there is a large degree of variance in the conversion of expenditures into sales. As such, this measure will penalize "lucky" firms that achieve a successful innovation early in the process and shelter those that do not have success. Furthermore, there is likely to be a large difference in this measure across industries (with more cutting edge industries likely requiring more expenditures to push the frontier) and across countries (as the cost of skilled labour and other inputs will vary by location).

Indicator 7: Interest expense to income ratios of MNE affiliates in countries with above average statutory tax rates

25. As noted above, one would expect that the rate of return would vary by risk of the investment. This also applies to internal loans, with riskier projects and locations facing higher interest rates.

26. As with Indicator 3, this presupposes that BEPS is occurring by focusing on a select set of countries.

27. Similar to the above noted issues regarding internal transactions, it must be remembered that internal interest rates are used for internal management as well as potential profit shifting.

28. A key factor in the internal interest rate is access to funds. Affiliates that can borrow in local markets cheaply may seek those funds before tapping parental funding (which has an opportunity cost to the multinational). Similarly, the lending affiliate's cost, and therefore the interest rate, will depend on their access to funding. If local capital markets are important to the firm (as indicated by Davies and Gresik 2003), then these local considerations will have an important impact on this indicator.

III: Specific Responses to Questions for Consultation

For indicators that use a specific group of countries (e.g., top 15 countries) or different groups of firms (e.g. global top 250 companies) how should changes over time in the composition of the groups be handled? While maintaining the same composition over time ensures year by year comparability, annual changes in the composition would result in a more representative measure of the current value of an indicator.

29. One would expect that, for categories such as this, the top few countries/firms will remain fairly stable over time with much more fluctuation for those near the cut-off. To make a comparison, the top five origins and destinations for FDI are fairly steady, however, the number 9 and 10 positions churn year to year among another group of countries.

30. As such, a better alternative would be to create "bands" based on countries' past average performances. For example, suppose that you consider a country's ranking for a given indicator over a moving window of the past 10 years. If it enters the top 15 more than 8 times, it is in the "high", if it enters 5-8 times, it is in the "medium" group, if it enters 2-4 times, it is in the "low" group and if it enters at most once, it is in the "not included" group. With these groups now defined, the indicator can be averaged within a group and then this can be used to construct a weighted average across the low, medium and high groups to construct a global average. Obviously, the weights will affect the global average, therefore careful consideration should be given to address the number of countries within a category and the relative importance across categories.

31. The advantage of this approach is that it will minimize fluctuation of the band a country is in year-on-year and thus minimizing the issue of the changing set of countries under consideration, yet the moving average of a 10-year window will introduce the desired time series movements.

32. Note, however, that in line with the above criticisms, that these group definitions are problematic. For example, whether one uses stocks, flows, employment, or some other measure of FDI will dramatically affect the top 15 countries in indicator 1. Likewise, focusing on only low-tax countries (where that definition itself may vary year on year) a priori allocates some countries to the “not included” group.

How should the results be reported? Depending on data availability, the indicator values may be reported globally, by country, by industry or other categories.

33. This question clearly depends on the indicator in question as some (such as Indicator 1) are by definition at the country level whereas others (Indicator 4) are inherently at the firm level. This latter approach raises something not addressed: the issue of confidentiality. In particular, if indicators are to be made public, they must be aggregated so as to maintain firm confidentiality. This will inherently affect the way in which they can be reported.

34. That aside, in order to be meaningful, the indicator must be reported at a sufficiently disaggregated level so as to make a comparison possible. For example, Indicator 2 considers the profit rate of MNE affiliates in low-tax locations. What is the counter-factual? The same MNE's affiliates in a high-tax location? A non-MNE in the same low-tax jurisdiction? To judge whether the profit rate is abnormally high, an appropriate comparison needs to be made. As discussed above in Section II, this requires a comparison of like-to-like and therefore needs to be done at the sector level. However, such a comparison may not be possible if there is no domestic activity in the sector (a problem for Indicator 5 as well) or that a given affiliate represents a unique sector in the MNE's global production chain. Thus, it is impossible to state an overarching, appropriate level of reporting across the methods and highlights the problems inherent in the measures.

Should any of the indicators be dropped? What additional potential measures could be included?

35. As discussed in detail above, the indicators all suffer from problems. Some (such as Indicator 1 and Indicator 3) are a priori biased because they ignore overarching data patterns and focus on a predetermined set of countries rather than treating BEPS as the global phenomenon that it is. Others, such as those relying on profit rates, suffer because of the problems inherent with imputing the key measure. Finally, indicators such as 7 and 8 will be erroneous due to the measures' inability to deal with the underlying processes driving the measure.

36. Overarching all of this is the simple fact that the extent of BEPS is private information held at the firm level. As such, attempts to obtain estimates of it will suffer from lack of data, the misrepresentation of information by firms, and changes in firm behaviour that will affect the indicator values. This suggests the need for a mechanism design, menu approach to elicit firms to self-report the extent of their BEPS behaviour. Note, however, that this will *not* stop such activities and in fact will likely reward those who do the most profit shifting. However, if the goal is to extract information to construct an accurate measure of the scale of BEPS, this is the most sound methodology. Nevertheless, this method is completely missing from the proposed approaches.

Will the suggested set of indicators when considered together provide sufficient information for a strong indication of BEPS? If not, what indicators should be added or modified?

37. It is our estimation that these indicators, even when taken as a whole, will not provide a measure of BEPS that is realistic or fit for purpose. As discussed in detail in Section I, the individual indicators all have significant problems. Furthermore, several rely off of the same imputed information (such as the profit rate). As such, they will all be biased in similar directions meaning that their errors will reinforce one another when "considered together", providing a false confidence an aggregated BEPS measure that is built on inaccurate assumptions. As noted above, the most theoretically sound

methodology for constructing a measure of BEPS must be grounded in a mechanism design approach that elicits firms to voluntarily reveal the extent of their profit shifting. That, however, is likely to be politically difficult as it will require rewarding the firms with the most to hide, i.e. those with the most profit shifting, for providing truthful information.

IV: A Mechanism Design Approach to Measuring BEPS

38. All of the proposed indicators attempt to do the same thing (albeit in flawed ways): compare the actual declaration of the tax base to what it would be in a hypothetical baseline without profit shifting. In this hypothetical, as profits are not moved for tax or other reasons, the tax base is declared where it is generated. Note that this hypothetical itself has caveats as there are other, non-tax reasons why profits might not be allocated to where they are generated. Those issues aside, the fundamental flaw in all of the proposed methods is that they are trying to construct the baseline in the presence of both firm heterogeneity and private information held by the firm. To rectify this, the most theoretically appropriate solution would be to use a mechanism design approach (building from, for example, Bond and Gresik 1996).

39. Intuitively, this approach provides firms with a schedule, or *menu*, to choose from with each point on the schedule corresponding to the firm revealing information about the extent of their profit shifting in exchange for a reward. The key is to make the schedule so that firms will report truthfully, i.e. that they have no incentive to mis-state their activities because the tax that would result in would not be worth the reward from misrepresentation.

40. As a more formal discussion, suppose that the firm is defined by a "type" which includes both an observable component (α_i) and two unobservable components (δ_i and ε_i). The first contains factors such as industry, the countries in which subsidiaries are located, the patents held, and employment levels. The second would include the extent to which they are able to engage in aggressive tax planning. The third is a random component known only to the firm (think of this as unexpected shifts in profits). Together, these make up a world-wide allocation of its profits $\pi\left(\alpha_i,\delta_i,\varepsilon_i\right)$ which incurs a worldwide tax payment $T\left(\alpha_i,\delta_i,\varepsilon_i\right)$. Assume that all else equal this tax payment is decreasing in δ_i and that if $\delta_i = 0$ the firm is not engaging in tax planning.

Further, assume that the optimal δ_i is increasing in ε_i. The baseline is then $\pi\left(\alpha_i,0,\varepsilon_i\right)$ with an associated tax payment of $T\left(\alpha_i,0,\varepsilon_i\right) > T\left(\alpha_i,\delta_i,\varepsilon_i\right)$ and $\pi\left(\alpha_i,\delta_i,\varepsilon_i\right) - T\left(\alpha_i,\delta_i,\varepsilon_i\right) > \pi\left(\alpha_i,0,\varepsilon_i\right) - T\left(\alpha_i,0,\varepsilon_i\right)$.

41. The problem from the governments' perspectives is that ε_i is unobservable, i.e. it cannot construct the baseline without having the firm truthfully report its random component. If the firm fears that, should it do so, that governments will take away its ability to shift profit, it has an incentive to misrepresent ε_i. Therefore, the government would need to incentivize firms to report truthfully. By virtue of the Revelation Principle, we can restrict attention to direct mechanisms.

42. Thus, the government must provide an incentive $\beta\left(\hat{\varepsilon}_i\right)$ for the firm to report truthfully where the "hat" denotes the reported value. This must be so that:

$$\pi(\alpha_i,\delta_i,\varepsilon_i)-T(\alpha_i,\delta_i,\varepsilon_i)\le\pi(\alpha_i,0,\varepsilon_i)-T(\alpha_i,0,\varepsilon_i)+\beta(\varepsilon_i)$$

i.e. the firm will participate, and:

$$\pi(\alpha_i,0,\varepsilon_i)-T(\alpha_i,0,\varepsilon_i;\hat{\varepsilon}_i)+\beta(\hat{\varepsilon}_i)\le\pi(\alpha_i,0,\varepsilon_i)-T(\alpha_i,0,\varepsilon_i;\varepsilon_i)+\beta(\varepsilon_i)$$

i.e. the firm is better off reporting its type truthfully rather than some other type. These conditions will define the properties of the menu. With this information in hand, $T(\alpha_i,\delta_i,\varepsilon_i)-T(\alpha_i,0,\varepsilon_i;\varepsilon_i)$ would provide a measure of the reduction in tax payments resulting from BEPS.

43. Note that this is trivially guaranteed for the lowest ε_i since for that type $\delta_i=0$ and there is no profit shifting. For higher type firms, this will require that they are "paid off", i.e. a transfer must be made after profit shifting is no longer possible to elicit truth telling in the first place. This is the politically charged component as it rewards firms that were avoiding taxes.

44. Governments' objective of ensuring that multinational firms pay a fair share of taxes on their global profits is and will remain challenging as long as at the same time governments engage in tax competition to attract foreign direct investment. While governments are justified to decide their tax policy, tax rate differentials on corporate income across countries will continue to incentivize profit shifting and thus to generate a tension between these two policy objectives. To address this tension, international cooperation and coordination of tax reforms is essential. Such tax reforms would need to consider the nature and extent of the corporate tax base as well as its allocation across countries.

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