

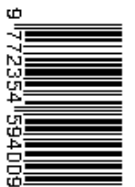
Ensuring a Balanced Tax System

Tax Law Design and Policy Series  
No 1516, June 2016

OPTIMAL CORPORATE  
INCOME TAX POLICY FOR LARGE  
DEVELOPING COUNTRIES IN AN  
INTEGRATED ECONOMY

Denny Vissaro, S.E., M.S.E., M.A.

ISSN: 2354-5941



# OPTIMAL CORPORATE INCOME TAX POLICY FOR LARGE DEVELOPING COUNTRIES IN AN INTEGRATED ECONOMY

Denny Vissaro, S.E., M.S.E., M.A.<sup>1</sup>

## 1. Introduction

Globalized economy increases the urgency for developing countries to create competitive tax system. As capital movement is becoming increasingly mobile, countries, especially the developing ones, are making effort to attract investment flow.<sup>2</sup> In effect, one can no longer simply form a tax policy without considering other countries' tax-policy move.<sup>3</sup> Growing interconnectivity between countries then means that there are unavoidable collisions of tax policies between them, whether it occurs directly or indirectly. The former appears mostly in the case of double taxation, where they usually try to solve it by concluding double taxation agreements. The latter, which is way more complicated<sup>4</sup>, transpires in the minds of policy makers in deciding tax policies by taking into account the influence of other countries' tax policies.

Tax policy decision is then intrinsically influenced, as countries' tax sovereignties are now becoming delusional.<sup>5</sup> Figure 1 clearly describes that countries' tax system has more downward pressure rather than upward pressure, whether it is taken as initiative move to take advantage from other countries

TABLE OF CONTENTS	
2	Introduction
5	Basic Model
7	Moving toward More Realistic Assumption
10	Interaction between Tax Systems: Source vs Residence Principle
14	Conclusion

or because influenced by other countries. Since moving capital between countries becomes relatively easy, firm's owners, especially the multinational ones, can simply choose to put the capital in the countries where their utility is at the optimum level. At international level, they can minimize the tax by investing their capital in low-tax jurisdictions. Moreover, even worse, they can shift the profit through transfer price and thin capitalization.<sup>6</sup> Put it straightforward, attractive tax policy in one country could potentially reap off the revenues of other countries from the capital flow.

Hence, existing national tax systems are under pressure.<sup>7</sup> The government are enforced to seek

1. Denny Vissaro is Fiscal Economist at Danny Darussalam Tax Center. Huge thanks and measurable gratitude are addressed to Bawono Kristiaji, who have supervised me right from inspiring the research idea, guiding the writing process with critical insight, until aiding the completion part with rich and broad perspective.

2. Peter Dietsch, *Catching Capital: The Ethics of Tax Competition* (New York: Oxford University Press, 2015).

3. Thomas Rixen, *The Political Economy of International Tax Governance* (Palgrave Macmillian, 2008).

4. Ekhard Janeba, "Corporate Income Tax Competition, Double Taxation Treaties, and Foreign Direct Investment," *Journal of Public Economics*, No. 56 (1995).

5. Peter Dietsch, *Catching Capital: The Ethics of Tax Competition* (New York: Oxford University Press, 2015).

6. Pablo Conconi, Carlo Peroni, Raymond Riezman, "Is Partial Tax Harmonization Desirable?," *Journal of Public Economics*, No. 92 (2008): 254-267.

7. Ravi Kanbur and Michael Keen, "Jeux Sans Frontieres: Tax Competition and Tax Coordination When Countries Differ in Size," *The American Economic Review*, Vol. 83, No. 4 (1993): 877-892.

### Disclaimer:

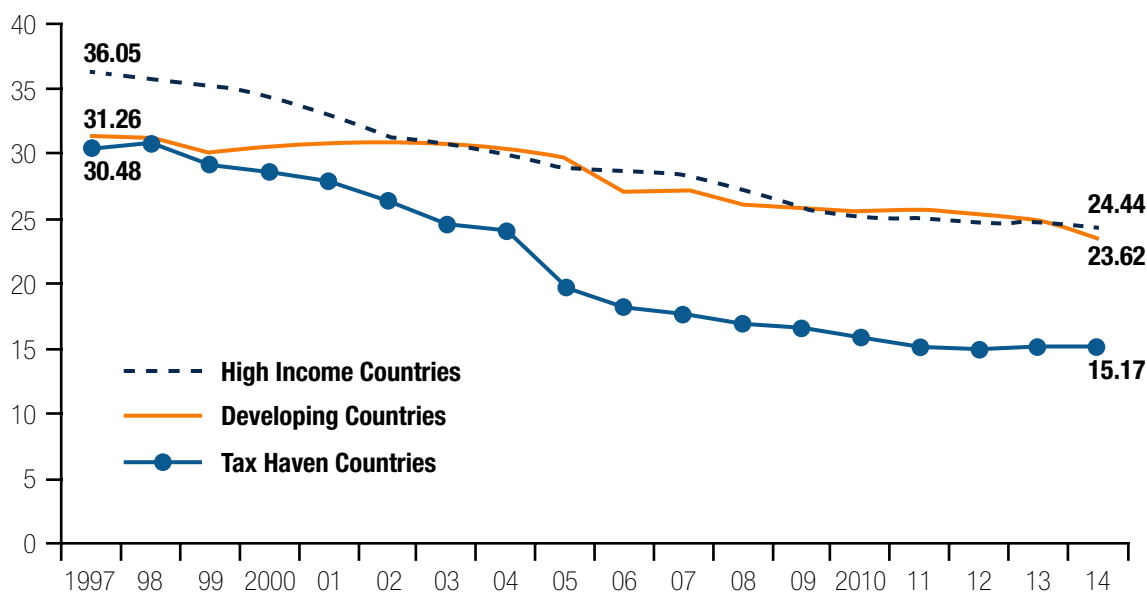
The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date received or that it will continue to be accurate in the future. The author's views expressed in this Working Paper do not necessarily reflect of the views of DANNY DARUSSLAM Tax Center. Working Papers describe research in progress by the authors and are published to elicit comments and to further debate.

for the best option of tax system in competing with other countries in order to catch capital worldwide. Besides enforcing the tax law and improving the tax administrative, determining the corporate tax rate is of equally importance in the tax competition. As Toumi (2002) stated, "tax competition arises when a particular jurisdiction, in its bid to attract some of multi-billion offshore investment and savings opportunities, tailors its fiscal regimes and

provides preferential tax treatment of offshore income to foreign investors."<sup>8</sup> In result, there is a tendency for countries to lower their tax rate in order to attract capital invested in their country.

8. Marika Toumi, "Anti-Avoidance and Harmful Tax Competition: From Unilateral to Multilateral Strategies?" in Andrew Lymer and John Hasseldine, *The International Taxation System*, (New York, Springer Science+Business Media, 2002).

Figure 1. Global Corporate Tax Rates, 1997 - 2014



Notes: samples for high income countries (38), developing countries (89), and tax haven countries (26). However, number of samples for each period unstable, due to unavailability of data. Figures are calculated by simple average of highest statutory tax rate.

Source: KPMG Corporate Tax Rates Survey. Available online at: <http://www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/corporate-tax-rates-table.aspx>

However, one should understand that under such competition, countries with more reliance to tax revenues are in the worse position.<sup>9</sup> Such countries have lower ability to compete, because losing tax revenue in order to attract capital inflow can put the countries in a worse-off condition. These condition are usually existed to the countries with large tax bases, or in other words, large population. The relatively smaller countries have the advantage to lower their taxes, since the benefit from capital inflow outweigh the lost tax revenue.

What is the optimal corporate tax rate for developing countries with large size? What if other countries change their corporate tax rate? How does it impact the consumer welfare? Do developing countries can gain pareto improvement through tax coordination, instead of compete?

Beside tax rate, what other instruments can be used for governments in tailoring the tax system? These sequence of subjects should be of considerations by tax policy makers in large-size developing countries. Clear mapping and economic rationalization toward possible realities are thus the requirements for developing countries to choose the optimal tax policies.

To determine the scope of the research, it is important to define from beginning with what is meant by large developing countries and what optimal tax policy is. First, large country here is not necessarily related to the territorial size of the country, but it is rather related to the ability of hosting lots of real economic activities, from which the government have large tax bases. Second, developing here is linked with high dependency of the country to the tax revenue, in a sense that assuming public provision function is strictly

9. Johannes Becker and Clemens Fuest, "Optimal Tax Policy When Firms Are Internationally Mobile," *International Tax Public Finance*, No. 18 (2011): 580-604.

concave<sup>10</sup>, the country is still relatively on the beginning of the curve, where the marginal value of public good is high.

Third, regarding optimal corporate income tax policy, I limit the scope to certain extent. By using the term 'optimal', I refer to the link with the welfare of consumers, which are assumed as economic individuals who maximize utility through consumption. By using the term 'corporate income tax policy', I limit to the example of corporate tax rate and the regime of the tax system, consisting to two form: source principle and residence principle. More importantly, the governments here is perceived as benevolent in a way that under international tax competition, they seek optimal policy to maximize the country's welfare, which is not only maximized by public goods provision – which is funded by tax –, but also by private goods consumption.<sup>11</sup>

In this paper, rather than to absorb the knowledge from empirical data, I try to generate the understanding by deriving mathematical equation. In such a way, the model represents rational behavior of economic actors – government and firms – in maximizing their utilization. This is not to underestimate the role of empirical research, but rather, in logical way, to contribute to the balance of the comprehension gained from observed findings and mathematical proof.

Vast changes occurring in taxation world force the stakeholders – including researchers – to respond in a quick way to understand what happens practically. This is understandably unavoidable, as late responds from policy makers to the challenges arisen in a modern world often means nothing. However, without the pursuance of theory aspect, empirical knowledge can possibly become spurious.

Nevertheless, in conducting theoretical proof through mathematics, one should be carefully critical in framing the underlying assumptions.<sup>12</sup> Theoretical proof is an effort to snatch the reality

into a simplistic framework – built by assumptions – in which one tries to extract principle, or concept, to comprehend the way the reality works. It means that sometimes, if one does not use appropriate assumption, the concluded idea will certainly not work in reality. The same also happens if the theory is directly used to different countries, where the economic context is totally different.

This is what I intend to do, which is to develop the existing theory, constructed by mathematical work, with a more adjusted assumptions which are more relevant to developing countries, especially Indonesia. With such assumptions, the findings can also be useful for other countries who are framed with the same characteristics. Such works purposed to developing countries is relatively limited, with most of them are conducted with assuming that the countries involved has economic attribute that are only belong to developed countries.

The theoretical side of international tax is not purposed to provide accurately the magnitude of determinants in influencing the optimal policy decision.<sup>13</sup> Rather, it constructs the logical framework that explains the kind of forces that lead to the desired outcome. This makes sometimes difficult for ones to translate the idea directly to practical use or policy actions.<sup>14</sup> However, these kind of researches create the ground for more practical research branches to follow, hence enriching the development of taxation knowledge in the long run.

Put it differently, it provides normative analysis to lead policy makers to rational decision in a specific (or general) circumstance. In other words, as also suggested by Becker and Fuest (2011), it does not give positive analysis, which are the role of empirical research.<sup>15</sup> It helps to provide the guidance for empirical research to prevent them from spurious knowledge that can be harmful if used to generate taxation policy.

Accordingly, the adjustment of the underlying assumption should be of continuous consideration in an immense changing world of taxation. More adjustment are even more needed for the case of developing countries, since the same approach that works for developed countries can sometimes not effective, or even worsening, for developing countries.

10. The concavity of government's spending is first formalized in Solow (1956) on theory of economic growth. Since welfare here is function of consumption on private and public goods, the concavity public provision also applies to the welfare. See Robert J. Barro, "Government Spending in a Simple Model of Endogenous Growth", *Journal of Political Economy*, No. 98 (1990): 103-125. See also Mostafa Beshkar and Eric W. Bond, "Safeguards and Investigations", in Rajat Acharyya and Sugata Marjit, *Trade Globalization and Development: Essays in Honor of Kalyan K. Sanyal*, (Springer, 2013).

11. Following Tiebout model on government provision, the government optimization function implied in this paper is on the contrary form of leviathan model. Thus, the government's behavior represents the population's preferences. See Charles M. Tiebout, "A Pure Theory of Local Expenditures", *The Journal of Political Economy*, Vol. 64, No. 5 (1956): 416-424.

12. See S. Bucovetsky, "Assymetric Tax Competition", *Journal of Urban Economics*, No. 30 (1991): 167-181

13. Johannes Becker and Clemens Fuest, "Optimal Tax Policy When Firms Are Internationally Mobile," *International Tax Public Finance*, No. 18 (2011): 580-604.

14. Goncalo Monteiro, Adam Cook, and Sanjoy Dey, "Optimal Tax Policy under Habit Formation and Capital Utilization," *Journal of Macroeconomics*, No. 37 (2013): 230-248.

15. Johannes Becker and Clemens Fuest, "Optimal Tax Policy When Firms Are Internationally Mobile," *International Tax Public Finance*, No. 18 (2011): 580-604.

The existing theoretical research thus needs to be followed by a series of empirical proof. Too simplified theory might not just nullify the theoretical relevance, but could also provide policies that exacerbate the problem. And to know what assumptions are relevant, one should understand how to connect the role of theoretical and empirical research.

Thus, in this paper, I present the theoretical explanation in the following order. First, I explain the traditional but useful model that are broadly used by other researchers to derive more contextualized theory for recent issues. Second, I continue with relaxing the assumption used in the basic model to get the theory closer to practical world. I do it by incorporating two base of adjusted assumptions, which are: (i) taking into account the possibilities for firms to shift the profit without moving the whole capital; (ii) considering the consequence of implementing differentiated corporate tax rate in dealing with tax competition. Third, for further case, I make it possible for the countries to integrate the case when countries actually can develop the tax system not only by determining the tax rate, but also by setting the regime used in country, which are source principle and residence principle. Fourth, with the generated findings, I try to take several policy implications that can be insightful for policy makers to deal with tax competition. Lastly, the paper is completed with the conclusion.

## 2. Basic Model

When we analyze the capital owner's behavior, we should keep in mind that the decision is governed by the objective to maximize the return. In formalizing the logical framework of tax policies and investment decision, utilizing model built by Zodrow and Mieszkowski (1986) and Wilson (1986)<sup>16</sup> – or usually mentioned as ZMW model – can be a good start to generate insightful ideas.

The model considers a world economy consisting of  $n$  "countries" ( $i = 1, \dots, n$ ) that have investment opportunities represented by production function  $f_i(k_i)$ , where  $k_i$  denotes aggregate capital ratio and  $f_i$  represents the aggregate output. Thus,  $f_i(k_i)$  represents that the amount of output produced is influenced by the capital invested in the production. There are other numerous factors that can also influence the production function, such as law, bureaucracy, politics etc, but here, the reality is simplified by removing other irrelevant aspects

to the model.

The profit generated from production function of country  $i$  is then deducted by  $t_i$ . Tax treatment here is assumed to depend only on the location of the investment, as the countries are assumed to use "source" based principle. Accordingly, in equilibrium, all investors must achieve the same after-tax rate of return on capital, denoted by  $\rho$ . Put it mathematically,

$$f_i(k_i) - t_i = \rho \text{ for all } i = 1, \dots, n. \quad (1)$$

Here, we should acknowledge that, since capital is freely mobile, world capital-labor ratio is fixed at  $\bar{k}$ , causing market clearing condition

$$\sum_{i=1}^n \sigma_i k_i = \sum_{i=1}^n \sigma_i \bar{k}_i = \bar{k}, \quad (2)$$

Where  $\sigma_i = h_i \sum_{s=1}^n h_s$ .

Equation (2) is necessary to emphasize that capital and labor can always choose place to go so that there is balance in capital market. Or in other words, equilibrium condition can always be achieved. Although realistically the balance is never equalized – and will never be –, we believe that the flow movement of labor and capital across border moves in a way as continuously nearing the equilibrium state. Thus, (1) and (2) jointly determine the amount of capital allocated to each country and the common net of return.

Now suggest that one of country changes its tax rate, while the rest ( $n - 1$  number of countries) do not. Adjusted equation (1) then holds for  $n - 1$ , which represents all other countries that do not increase the tax rate, that

$$f_i'(k_i) - t_i = f_n' \left( \frac{\bar{k}}{\sigma_n} - \sum_{s=1}^{n-1} (\sigma_s / \sigma_n) k_s \right) - t_n \quad (3)$$

We can infer from equation (3) that the added value of increasing one unit of capital is intrinsically determined by the ratio of capital itself in respect with the associated labor involved in production process. Put it alternatively, the net return of capital is generated after deducting it by labor wage and tax. Accordingly, through mathematical routine worked by Zodrow, Mieszkowski, and Wilson, this gives us a matrix system<sup>17</sup> from which following conditions follows:

$$\frac{\partial k_i}{\partial t_j} = \begin{cases} \frac{1}{f_i'} \left( \frac{\sum_{s=1}^n \sigma_s \varphi_s}{\sum_{s=1}^n \sigma_s} \right) < 0, \text{ for } i = j \\ \frac{1}{\sigma_i} \left( \frac{\varphi_i \varphi_j}{\sum_{s=1}^n \sigma_s} \right) > 0, \text{ for } i \neq j \end{cases} \quad (4)$$

An increase in the tax rate in any country  $i$  thus reduces the capital employed in the production function, and thus increases capital in all other

16. Michael Keen and Kai A. Konrad, "The Theory of International Tax Competition and Coordination," *Max Planck Institute for Tax Law and Public Finance Working Paper*, No. 06 (2014). I partially follow the sequential step of the modelling in this paper.

17. *Ibid.*

countries. Capital will keep moving away until the increased scarcity of capital in  $i$  has increased the gross marginal product of capital there and reduced the marginal product of capital elsewhere by enough to bring the arbitrage condition back into balance.

On the consumption and welfare side of the model, a representative consumer have preferences of private goods and public provision, which can be expressed as  $W_i(x, r) = x + G_i(r)$ .  $x$  is private consumption and  $r$  is publicly provided good;  $G_i$  is strictly increasing, strictly concave and satisfying an Inada conditions<sup>18</sup> which ensures that, in the absence of other source of revenue, all countries will charge a strictly positive tax rate in equilibrium. Private consumption is financed by the rents to domestic immobile factors – or in short, wage  $-f_i(k_i) - f_i'(k_i)k_i$  and the net return to domestically owned capital, of  $\rho\bar{k}_i$ . Meanwhile, public goods in financed by per capita receipts  $t_i k_i$  from capital located domestically, which means  $r_i = t_i k_i$ . Thus, the typical consumer in country can be expressed as

$$W_i = f_i(k_i) - f_i'(k_i)k_i + \rho\bar{k}_i + G_i(t_i k_i) \quad (5)$$

Each government maximizes its objective function by a choice of its tax rate, taking the tax rate choices of all other countries as given, and anticipating the implications of their choice for the allocation of and net return to capital. In the model, the tax rate is assumed as the single factor contributing to the allocation of capital across border in international economy. On one side, tax rate positively affect the public goods provision, but on the other one, it negatively affect private production decision taken by capital owner.

Considering the big picture suggested by the model, the government cannot solely consider its objective by just maximizing tax revenue. The impact to the economic decision taken by private sectors is also an influential aspect for the government in shaping the national tax system. Welfare in country  $i$  is determined by two determining elements: private consumption – which is funded by rents to immobile factors,  $f_i(k_i) - f_i'(k_i)k_i$  and net return to domestically owned capital,  $\rho\bar{k}_i$  –, and public provision  $G_i$ , which is determined by per capita receipts  $t_i k_i$  from capital located domestically.

18. Inada conditions guarantee that a production function is positively related to the associated factors. The conditions are built by several assumptions, which are: 1) the value of the function at 0 is zero, ; 2) the function is strictly increasing in  $G$ , ; 3) the derivative of the function is decreasing so that the function is strictly concave, ; 4) the limit of the derivative approaches plus infinity when  $k$  goes to zero,  $\lim$ ; and 5) the limit of the derivative approaches zero when  $G$  goes to infinity,  $\lim$ . See Daniel Primont and Rolf Fare, "Inada Conditions and the Law of Diminishing Returns", *Discussion Papers*, No. 3 (2001): 1-8.

Hence, the welfare-maximizing tax rate  $t_i$  must fulfill following first-order conditions

$$\frac{\partial W_i}{\partial t_i} - f_i'(k_i)k_i \frac{\partial k_i}{\partial t_i} + G_i'(t_i k_i) \left( k_i + t_i \frac{\partial k_i}{\partial t_i} \right) + \frac{\partial \rho}{\partial t_i} \bar{k}_i = 0 \quad (6)$$

We can see clearly here the impact of increasing tax rate imposed by one unit. An increase in tax rate would reduce rents to immobile factors due to capital outflow this would cause. Meanwhile, this change also increases revenue, thus increasing public provision, but reducing net income earned from capital endowment. Whether the decision to increase tax rate will improve the welfare or not will depend on whether the increased government revenue can more than offset the reduced rents to immobile factors.

One should note that equation (6) is the case when tax rate in other countries,  $t_{-i}$  is taken as one-shot stance. If  $t_j$  ( $t_j$  is part of  $t_{-i}$ ) is changed, assuming strategic complementarity would increase, then it holds that:

$$\frac{\partial^2 W_i}{\partial t_i \partial t_j} > 0 \quad (7)$$

Following the same logic, intuition might suggest that, the best response to this is for  $i$  to reduce its own rate too. But, realistically, this has not certain direction of value. As Keen and Konrad (2014) clearly stated: 'A lower tax rate in some other country  $j$ , for instance, moves capital out of country  $i$  and so reduces its tax revenue and public spending; whether the best response to this is for  $i$  to raise or lower its tax rate depends, among other things, on how large an increase in the marginal value of public spending this implies.'<sup>19</sup>

A solution to the system (6) is an intersection of the best responses  $t_i(t_{-i})$  and characterizes an interior Nash equilibrium. In the system comprised of numerous countries, each of the economy stays at the state where there is no better gain in making changes given the state of other countries' economy.

The next question is whether such an equilibrium has any social optimality properties. Potential inefficiency arises in a game with  $W_i(t_i, t_{-i})$  when . For instance, if

$$\frac{\partial W_i}{\partial t_j} > 0 \quad (8)$$

then, country  $j$  would set tax rate that, from the perspective of country  $i$ , is too low. For the model ZMW model, (4) above implies that

$$\frac{\partial W_i}{\partial t_j} = \{f_i'(\bar{k}_i - k_i) + G_i'(t_i k_i) t_i\} \frac{\partial k_i}{\partial t_j} \quad (9)$$

19. Michael Keen and Kai A. Konrad, "The Theory of International Tax Competition and Coordination," *Max Planck Institute for Tax Law and Public Finance Working Paper*, No. 06 (2014).

Considering in case all countries raise their tax rates some common and small amount  $dt_i = dt$ , then it holds that from equation (1), this simply reduces the common net return  $\rho$  by the same amount and leaves the allocation of capital unchanged, so that the welfare of country  $i$  is  $dW_i = -\bar{k}_i dt + G'_i k_i dt$ ; Evaluating this from Nash equilibrium, 's first-order condition (7) then implies

$$dW_i = [(k_i - \bar{k}_i) f_i' - G'_i(t_i k_i) t_i] \frac{\partial k_i}{\partial t_i} dt > 0 \quad (10)$$

By assuming all countries are identical ( $k_i = \bar{k}_i$ ), then

$$dW_i = -G'_i(t_i k_i) t_i \frac{\partial k_i}{\partial t_i} dt > 0 \quad (11)$$

Given the positive sign, it shows that the Nash equilibrium is Pareto inefficient: all countries would benefit from a small, uniform increase in all tax rates. This does not hold if the tax-rate increasing actions are not followed by the related countries. If there are only one or few countries take such actions, capital will simply move away from the countries and enter the other countries who do not increase the tax rate. This then becomes the central argument against unconstrained international tax competition.

### 3. Moving toward More Realistic Assumption

#### 3.1. Incorporating Profit-Shifting Practices

Despite the insightful information that ZMW model can give, its assumption is too simplistic and general. It is thus inherently limited to comprehend the complex practices of international tax competition. For instance, moving capital does not necessarily mean a multinational move its subsidiary from one to another country, but it can just move away its earning through profit shifting practices – mostly by transfer price and thin capitalization instruments. UNCTAD has recently estimated that, every 10% increase of investment from certain countries will impact to the reduce of the rate of return of the related companies in developing countries by 1%.<sup>20</sup> Thus, it is necessary to make more realistic assumption underlying the model.

How does profit-shifting activities affect the way in which strategic aspects of international competition works? To get the answer, we can start with Kanbur and Keen (1993) model. This model is actually constructed for commodity

tax. But, later in this section, by the work done by Keen and Konrad (2014)<sup>21</sup>, we can see that the generated result can also logically apply for profit shifting interpretation. Assume there are two countries ( $i = 1, 2$ ), where the population is uniformly distributed in each, but population sizes  $h_i$  differs in a way that  $h_1 > h_2$ . In each country, there is only one unit of some good. Suppose that  $t_1 > t_2$ , then the consumers in country 2 find it worth to purchase abroad in country 1 if  $t_1 + \delta s < t_2$ , or

$$s^* = \frac{t_2 - t_1}{\delta} \quad (12)$$

In consequence, revenues of the two countries are:

$$r_1 = t_1 \left( h_1 + h_2 \left( \frac{t_2 - t_1}{\delta} \right) \right) \text{ and } r_2 = t_2 h_2 \left( 1 - \left( \frac{t_2 - t_1}{\delta} \right) \right) \quad (13)$$

It appears that because of the movement, an amount of  $h_2 \left( \frac{t_2 - t_1}{\delta} \right)$  move from country 2 to buy the good in country 1. In effect, the tax base of country 2 is only as many as  $h_2 \left( 1 - \left( \frac{t_2 - t_1}{\delta} \right) \right)$ . Accordingly, assuming that each government wants to maximize its tax revenue, taking as given the tax set of the other, then maximizing the  $r$  heavily depends on its relative size. After mathematical routine done by Kanbur and Keen (1991), the best response of each  $t_1(t_2)$  and  $t_2(t_1)$  are

$$t_1(t_2) = \begin{cases} \frac{1}{2}(\delta + T) & \text{if } t_2 \leq \delta \sqrt{\frac{h_1}{h_2}} \\ \frac{1}{2} \left( \delta \frac{h_1}{h_2} + t_2 \right) & \text{if } t_2 \geq \delta \sqrt{\frac{h_1}{h_2}} \end{cases} \quad (14)$$

And, for  $t_2$

$$t_2(t_1) = \begin{cases} \frac{1}{2}(\delta + t_1) & \text{if } t_1 \leq \delta \\ t_1 & \text{if } \delta \leq t_1 \leq \delta \frac{h_1}{h_2} \\ \frac{1}{2} \left( \delta \frac{h_1}{h_2} + t_1 \right) & \text{if } t_1 \geq \frac{h_1}{h_2} \end{cases} \quad (15)$$

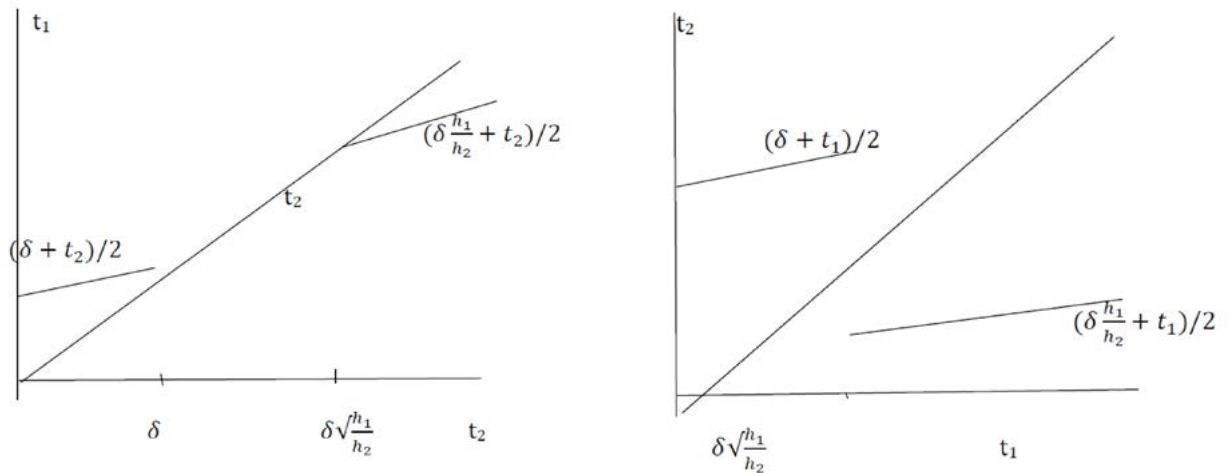
The described responses revealed in (14) and (15) shows that there are mismatched responses between country 1 and country 2. This is visually depicted in Figure 2.

As depicted in the illustration, when the large country set low  $t_2$ , it is optimal for the small country to set  $t_1$  above  $t_2$ . Some citizen of the small country are moving to the large country, but the tax rate in the large country is so low that this condition will not hold long for them. But, as the large country increases its tax rate beyond  $\delta \sqrt{\frac{h_1}{h_2}}$ , it becomes gainful for the small country to set a lower tax (discontinued from the path of  $\delta + t_1/2$ ). As the tax rate of large

20. UNCTAD, "FDI, Tax, and Development: The Fiscal Role of Multinational Enterprise towards Guidelines for Coherent International Tax and Investment Policies", *UNCTAD Working Paper*, (2015).

21. Michael Keen and Kai A. Konrad, "The Theory of International Tax Competition and Coordination," *Max Planck Institute for Tax Law and Public Finance Working Paper*, No. 06 (2014).

Figure 2. Best Responses for Country 1 (Large Country) and Country 2 (Small Country)



Source: Kanbur and Keen (1993)

country keeps increasing, the small country can follow by increasing its tax rate with still gaining from the capital inflow. Continuously by doing so, the small country will be advantageous from the capital inflow coming from the large countries.

By assuming that country 2 initially set  $t_2$  above  $\delta\sqrt{\frac{h_1}{h_2}}$ , the best response for each country are then sequentially

$$t_1(t_2) = \frac{1}{2}(\delta\sqrt{\frac{h_1}{h_2}} + t_2) \text{ and } t_2(t_1) = \frac{1}{2}(\delta + t_1) \quad (16)$$

Equation (16) implies that if the larger country (for example, country 2) lowers its tax rate, country 1, as the smaller country, would set a very low rate in order to attract consumer from country 2. It would be the best option for country 1 since the revenue lost could be (or probably, more than) offset by the revenue gained from abroad. Conversely, if country 2 increases its tax rate, there will be a point where country 1 prefer to stop following to increase its tax rate, which by means, implementing the strategy of undercutting. The sequential responses however will be unending, since each country will always respond each other. Nevertheless, Kanbur and Keen (1993) shows that there is Nash equilibrium under this relationship, which is as following equation.

$$t_1^N = \delta \left( \frac{2}{3} \frac{h_1}{h_2} + \frac{1}{3} \right) \text{ and } t_2^N = \delta \left( \frac{1}{3} \frac{h_1}{h_2} + \frac{2}{3} \right) \quad (17)$$

It enlighten us the idea that smaller countries has more chance in taking advantage in whichever rates the larger countries choose. Practically, the smaller ones will set lower tax rates. This is because there is major asymmetry between the responses of small country and the large country.

However, the equation above still assumes a condition of commodity tax. Keen and Konrad (2014) proves that a model of profit shifting will lead to a similar structure. Suppose a multinational earns “true” profits in each of the two countries. However, the declared profit to be taxed is different from the “true” profit, depending on how intensive the company uses transfer pricing and other instruments of profit shifting from country 2 to country 1 (remind that  $t_1 < t_2$ ). In other words, there is  $s$  fraction of real profit in country 2 that is shifted to country 1. Assuming there is cost of profit shifting which takes form of  $(\frac{1}{2})\delta s^2\pi_i$ , so the firms’s net profit is

$$\pi = \pi_1 + \pi_2 - t_1(\pi_1 + s\pi_2) - t_2(\pi_2 - s\pi_2) - \left(\frac{1}{2}\right)\delta s^2\pi_2 \quad (16)$$

Maximizing (16) with respect to  $s$  will provide us an equation exactly the same as (12), while the amount of the revenues received by each country is equal to (13). The proportion of profit shifted from country 2 to country 1 thus depends on the difference of the tax base ( $t_2 - t_1$ ) and the cost of implementing such shifting. Accordingly, the amount of proportion of shifted profit can be shown again on (17). For the revenues in the two countries, the equation can be rewritten by replacing the tax base, population ( $h_i$ ) to  $\pi_i$  as well, as shown in (18).

$$s^* = \frac{t_2 - t_1}{\delta} \quad (17)$$

$$r_1 = t_1 \left( \pi_1 + \pi_2 \left( \frac{t_2 - t_1}{\delta} \right) \right) \text{ and } r_2 = t_2 \pi_2 \left( 1 - \left( \frac{t_2 - t_1}{\delta} \right) \right) \quad (18)$$

The smaller country – in a sense that it can only yield lower profits from real economic activities–, will set lower tax in equilibrium. The reason is that this type of country loses relatively small tax revenue from its own tax base, so that it is much better for the country



to attract taxable profit from other countries by lowering its tax rate. We can compare this rationale to the economic reality, that countries who are listed as tax haven countries have relatively smaller size of population (e.g. British Virgin Islands, Curacao, Luxembourg, Panama).

When it comes to lowering corporate income tax rate, large countries have heavier consideration compared to smaller countries. On one side, according to KK model, this policy helps to keep tax base to stay in the border, but on the other side, tax revenue is reduced due to the lower rate. It becomes even heavier when the large country is a developing country. If it prefers to keep the rate – which means tax rate differs exists –, its tax base will be still eroded, since profit shifting practices are sensitive to corporate tax rate difference.<sup>22</sup> However, recall that based on ZMW model, under strictly concave government spending, developing countries value public provision highly. Losing tax revenue then affects more significantly for developing countries compared to developed ones. This is why, large developing countries usually hold relatively high corporate income tax (e.g. Indonesia, India, China, Pakistan).

Hence, we can see that the conclusion from KK model is in line with the one that is derived through ZMW model. The similar conclusion of the two also include to the fact that setting uniform rate internationally will harm the small, low tax country, whereas imposing a minimum tax anywhere around the area will attain Pareto-improving. The two also provide us insight that, on one side, tax competition gives small countries a good deal, while hurting large developing countries. On the other side, tax coordination will benefit both side of the countries, while discouraging profit shifting practices.

### 3.2. Implementing Tax Rate Differentiation

So far, we get to the knowledge that big-size countries tend to be the loser in tax competition due to its lack of ability to lower its tax rate. But it uses the assumption that each country can only use single tax rate. Now consider if, given the large size of the countries, the country choose to implement two tax rate, namely  $t_{2a}$  and  $t_{2b}$ , where ( $t_{2a} > t_{2b}$ ) under assumption that the tax rates are both non-progressive. How does it affect the preference for big country to maximize its welfare?

Since now the country can choose to apply

different tax rates, there are more than one applied tax rates that can be imposed whether based on the national region or the type of the investments. For simplicity, suppose the country hold two differentiated-rate taxes. Adjusting the equation (4) formulated earlier, after mathematical process<sup>23</sup>, it then becomes

$$W_2 = f_{22}(k_{22}) - f'_{22}(k_{22})k_{22} + \rho\bar{k}_{22} + G_{22}(t_{22}k_{22}) \quad (18)$$

With  $t_{22}$  is part of  $\{t_{2a}, t_{2b}, t_{2c}, \dots\}$

We can see now that each of the elements of consumptions level, which are influenced by tax, are influenced by differentiated tax rate.  $t_{22}$  is used to denote set of tax rate policy consisting more than one tax rate. Now suppose country 1 lowers its tax rate. In the normal case, a proportion amount of revenue of  $t_2 k_2$  would lost because there would be a movement of capital, as much as  $\theta$ , to move from country 2 to country 1. Instead of lowering the tax rate as a whole, country 2 can choose just to lower the tax rate for specific region, in which the tax rate is  $t_{2b}$ . now, the capital owners have two different options between moving the capital to country 2 or to other region of country 1 that implement lower tax rate. As a result, part of  $\theta$  will move to the specific region in country 2, and the resulting lost is smaller than  $t_2 k_2$ .

One should remind that, as implied by (18), higher level of  $W_2$  can be attained. An amount of capital who are intended to leave territory with high level of tax might choose to move instead to other region of the same country that has specialized lower tax rate.<sup>24</sup> This, in result, minimize the amount of capital outflow caused by tax competition with small countries.

Practically, differentiated tax rates are implemented by forming onshore financial center in certain areas (or islands) of a country (for example Malaysia with Labuan, United States with Delaware, Spain with Basque, etc). This way, countries can rationally attract capital inflow while maintaining tax revenue. Putting it under the ZMW and KK frame, this policy helps countries to maximize the welfare from both private and public goods consumption. Private goods consumption is maintained through capital inflow, while public goods provision is sustained since one of the tax rate remains unchanged and the tax base is not incentivized to go abroad.

23.  $W_2 = f_{2a}(k_{2a}) - f'_{2a}(k_{2a})k_{2a} + \rho\bar{k}_{2a} + G_{2a}(t_{2a}k_{2a}) + f_{2b}(k_{2b}) - f'_{2b}(k_{2b})k_{2b} + \rho\bar{k}_{2b} + G_{2b}(t_{2b}k_{2b})$ . But for simplification, single subscript '2D' is used to represent the multiple tax rate.

24. S.M. Ali Abas et al, "A Partial Race to the Bottom: Corporate Tax Developments in Emerging and Developing Economies", *IMF Working Paper*, No. 12/28 (2012): 3-22.

22. See B. Bawono Kristiaji, "Incentives and Disincentives of Profit Shifting in Developing Countries," MSc Thesis., Tilburg University, 2015.

This move can be very useful for countries with various types of investment opportunities. For example, the differentiation can be made based on the region, like mentioned before. Second, the tax rate can be differentiated based on the type of investment. The latter example is usually applied when the government also intends to develop the sector. In most practice, countries tend to use tax incentives to attract capital inflow<sup>25</sup>, simultaneously followed by effort to enlarge the tax bases<sup>26</sup> and increasing tax expenditure.<sup>27</sup> The tax incentives include tax holiday, tax allowance, cost deduction, loss carry forward, etc. Through these facilitations, firms can then be temporarily attracted to utilize such opportunity.

#### 4. Interaction between Tax Systems: Source vs Residence Principle

Up to the discussion here, we assumed that each involved country uses the same treatment of the existing capital with the same principle, that is, 'source' principle. But in international practice, the world consists of nationals using the mix of source and residence principle. In fact, a single country might implement both of these as the basis to levy different types of activities. Incorporating this certainty will be very illuminating in sensing the investment flow direction in an integrated economy.

Speaking of unrestricted capital flow, one should reexamine the practical aspect of equality between saving and investment.<sup>28</sup> In a closed economy, savings collected in the country will be solely used for investment in the territory. The relation of both saving and investment will then bring investment return to an equilibrium state. This modest perspective, however, is contextually vanished in a borderless economy. When an investor has a better opportunity of investment return – partially represented by interest rate – in another country, he is incentivized to move his capital abroad. Hence, as a result, a country could not set an interest rate independently without considering other countries' interest rate.

In a world with a borderless economy, the equality between saving and investment does not

hold for each country separately.<sup>29</sup> It rather holds for world saving and investment in aggregate. As a consequence, the removed economic border between countries certainly brings out the issue of the efficiency of the international allocation of the world investments and savings.

As the economic border between countries is continually dematerialized, especially within a specific zone, corporations will freely invest their capital across countries. Investors will choose countries where their profit can be maximized, and on the contrary, will pull their capital from the less profitable country. Hence, the interest rate in each country will eventually get into equilibrium level, where the marginal rate of capital return is equalized between countries.

However, one should note that it is the after-tax investment return that an investor seeks to maximize in making a decision. Having a tax rate too high to a certain level will nullify the desirability of capital owners to invest, and conversely, lowering the tax rate will attract capital to flow in. Thus it is also of consideration for government in deciding the rate through which the society welfare can be maximized. Recall as stated previously in ZMW model, welfare is gained from private goods consumption – paid from immobile capital rent, which can be equally stated as labor income – and public provision – funded by tax revenue of the government.

The problem becomes more puzzling when countries have different approaches in determining the tax base. With such international mobility, the capital flowing overseas may be subject to two tax jurisdictions. The occurrence of double taxation has far-reaching consequences for the direction and magnitude of the flows of capital in the international economy.<sup>30</sup> For instance, if the home country taxes its residence on their capital income originating in the foreign country and the foreign country taxes non-residence on their capital income originating in the foreign country, the generated income would be subject to taxation.

Two common approaches of international taxation which lay the foundation for many national tax systems are the residence principle and source principle. The former uses the place of residency of the taxpayer as the basis for assessment of tax liabilities, while the latter emphasizes the source of income. Accordingly, under the residence principle, residents of the country are taxed

25. OECD, "Choosing Broad Base: Low Rate Approach to Taxation", *OECD Tax Policy Studies*, No. 19, (2010): 11.

26. Richard M. Bird, "The BBLR Approach to Tax Reform in Emerging Countries", *University of Toronto*, (Augustus, 2008).

27. Darussalam and Bawono Kristiaji, "Tax Expenditure atas Pajak Penghasilan: Rekomendasi bagi Indonesia", *DDTC Working Paper 0814*, (2014).

28. In an efficient economy, the every money that is saved is capitalized to fulfill the clearance condition. This process is comprehensively explained in Olivier Blanchard, *Macroeconomics*, (2008).

29. Salvador Barrios, "International Taxation and Multinational Firm Location Decision," *Economic Papers*, No. 356 (2009).

30. William B. Barker, "Optimal International Taxation and Tax Competition," *Northwestern Journal of International Law & Business*, Vol. 22 (2002).

uniformly, regardless of the source of the income. Non-residents are not taxed by the home country on their income originating on that country. While under the source principle, income originating in the home country is uniformly taxed, regardless of the residency of the income recipient.

The collision of the method applied between countries involve double taxation of the same tax base.<sup>31</sup> This issue is frequently eliminated by a system of domestic tax credits for foreign taxes or double taxation agreement. For instance, suppose that the home country adopts the source principle and that the foreign country adopts the residence principle. Suppose further that the foreign country allows a credit against taxes paid in the home country. In this case, if the home country's tax rate does not exceed the foreign country's rate, then the resident of the foreign country receives at home full credit against taxes paid abroad. In other words, the foreign country resident pay the same tax rate on domestic-source and foreign-source income.

However, if the home country's tax rate exceed the foreign country's tax rate, the foreign residence pays higher tax for income generated in the home country than in the foreign country. And in the most case, the foreign residence does not receive refund from the foreign country. In result, in this kind of situation, tax credit does not fully restore an effective residence principle in the foreign country, while on the contrary, it fully restores an effective source principle of the home country. Hence, in this context, tax credit – which in this case is applied by foreign country – gives benefit for home country's welfare in two ways: home country gains tax revenue generated from foreign capital inflow and immobile capital rent which is paid to the domestic labor.

This kind of situation can appeared in many ways, and thus affect the capital owners' decision on where to invest. Such flows have significant effect toward its way to achieve the viability of equilibrium in the world capital markets (world saving = world investment), under which countries are competing each other to catch capital.

To thoroughly examine the capital movement decision, using the model built up for tax arbitrage by Frenkel, Razid and Sadka (1992) is very informative.<sup>32</sup> Consider again the standard of two-country economy – for simplicity – with perfect capital mobility and denote interest rates in the home country and foreign country with  $r$  and  $r^*$  respectively. Generally, the home country may

have three different tax rates applying to capital income: (i)  $t_{rD}$ , which is the tax rate levied on residents on their domestic-source income; (ii)  $t_{rF}$ , which is effective tax rate levied on residents on their foreign-source income in addition to the tax already levied in the foreign country; (iii)  $t_{rN}$ , which is the tax rate levied on non-residents on their capital income originating in the home country.

With the same intuition, the foreign country may also have three tax rates which we denote by  $t_{rD}^*$ ,  $t_{rF}^*$ ,  $t_{rN}^*$  and respectively. With complete integration of capital markets between the two countries, capital will flow until this condition is reached, where

$$r(1 - t_{rD}) = r^*(1 - t_{rN}^* - t_{rF}^*) \quad (19)$$

This right, then the residents of the home country will move its capital abroad until the equation balanced again. Conversely, if the left is bigger than the right, there will be capital inflow from foreign country's residence, since the firms in world economy perceive that investing in the home country is more profitable. Equation holds the principle on the perspective of the residents in the home country. It implies that in equilibrium state, these residents are indifferent between investing at home or abroad, meaning that there is no incentive to change the place for investment. If the left section is smaller than the.

The same principle can be settled for the foreign countries to examine similar capital movement, which is

$$r(1 - t_{rN} - t_{rF}^*) = r^*(1 - t_{rD}^*) \quad (20)$$

If we are to take interest rate as constant, we can safely remove temporarily the influence of capital return. In such condition, tax rate is the only factor for capital owners in considering where to put his capital. Then, tax rate should hold the following equilibrium:

$$(1 - t_{rD})(1 - t_{rD}^*) = (1 - t_{rN}^* - t_{rF}^*)(1 - t_{rN} - t_{rF}^*) \quad (21)$$

This constraint implies that despite the two countries arrange each of their own tax system independently, and do not explicitly coordinate their tax systems between them, each one nevertheless must take into account the tax system of the other. Now consider first the case in which both countries adopt the source principle. Since that principle implies that income is taxed only according to its source, regardless of residency, in equilibrium it follows that

$$t_{rD} = t_{rN}, t_{rD}^* = t_{rN}^*, \text{ and } t_{rF} = t_{rD}^* \quad (22)$$

In the second possibility, let us consider the case in which both countries adopt the residence

31. Jacob Frenkel, Assaf Razin, and Efraim Sadka, "International Taxation In An Integrated World," *NBER Working Paper Series*, No. 23266 (1992).

32. *Ibid.*

principle. Since in this case income is taxed only according to the place of residency, regardless of the source, it follows that

$$t_{rD} = t_{rN}^* - t_{rF}^*, t_{rD}^* = t_{rN}^* + t_{rF}^* \text{ and } t_{rN} = t_{rN}^* \quad (23)$$

We see that when countries use the same regime of principle when levying the tax, reaching equilibrium state seen in equation (21) is viable and thus given equal the same capital return, there will be no capital movement across border. But in practice, this is certainly not the case. Let us now use the scenario when the two countries do not adopt the same effective principle. Suppose, for instance, home country adopts in effect the source principle, while the foreign country adopts the residence principle, so that

$$t_{rD} = t_{rN} \text{ and } t_{rF} = 0 \quad (24)$$

$$t_{rD}^* = t_{rN}^* - t_{rF}^* \text{ and } t_{rN}^* = 0 \quad (25)$$

These equations added the already existed constrain – equation 3 – that integrated world capital market cause to the country's tax system. These also give us the rationale that as long as equilibrium does not hold, countries will continuously compete each other in tax matters, through which firms maximize their capital return.

To examine the type of movement existed in the framework built in (24) and (25), note that in the perspective of home country, the tax rate imposed by non-residents is  $t_{rN}$ , while from the perspective of the foreign country, the tax rate imposed to them is  $t_{rF}^*$ , implying the total tax rate levied on the non-resident is investing in home country equals to  $t_{rN} + t_{rF}^*$ . It means that non-residents are only incentivized to move the capital to the home

country only if  $t_{rD}^* > t_{rN} + t_{rF}^*$ , which is more likely if the foreign country apply tax credit.

Now we move to residents of the home country. The tax imposed to them in the home country is  $t_{rD}$ , and obviously foreign country does not impose any tax rate to the residents. It then become an obvious better-off circumstance if the home-country residents move its capital abroad to foreign country. In such condition, both home country and foreign country do not impose any tax to them, and thus they pay zero tax since  $t_{rF} = t_{rN} = 0$ .

To attract investors to flow their capital inside the country, the government should realize that the incentive for cross-border investment is created by the taxes of the host country and residence country combined. To keep the analysis simple without losing the relevant aspect, let us keep the system comprising of two countries: home country and foreign country. Inside the system, the capital owner based in the foreign country considers whether to invest his capital domestically (foreign country) or abroad (home country).

The possible interactions are described below on Table 1. We show the analysis providing the best options for capital owners in each combination of possibilities of tax regimes the countries can use. Then, with the free movement of the capital, government tries to maximize the welfare, both from increasing tax revenues and rent for immobile capital, which is labor wage. With such effort, the government tries to maximize the capital inflow and minimize the capital outflow.

Table 1 provides us information about the level of incentive for foreign residents to invest at

**Table 1: Incentive for Capital Inflow Based on the Tax Regime**

Home country	Foreign country	Who collects?	Total tax paid by foreign resident	Level of incentive for cross-border investment
Source based	Residence based without alleviation	Both country	$t_{rN} + t_{rF}^*$	Very low incentive
Source based	Residence based with deduction	Both countries (reduced)	$t_{rN} + t_{rF}^* - \text{deduction}$	Low incentive
Source based	Residence based with credit	Both countries (reduced)	$t_{rN}$ if $t_{rN} > t_{rF}^*$ $t_{rF}^*$ if $t_{rN} < t_{rF}^*$	Moderate incentive
Source based	Source based	Home country	$t_{rN}$	Moderate incentive
Residence based	Residence based without alleviation	Foreign country	$t_{rF}^*$	Moderate incentive
Residence based	Residence based with deduction	Foreign country	$t_{rF}^*$	Moderate incentive
Residence based	Residence based with credit	Foreign country	$t_{rF}^*$	Moderate incentive
Residence based	Source based	None	0	High incentive

home country. The level of incentive here is solely determined by how much tax they have to pay if they are to invest at home country. I divide the level into three categories. First, if they are certainly pay lower tax investing at home country, the level of incentive is high. Second, if the amount of tax to pay at home country can possibly lower, higher, or equal, then the level of incentive is at moderate level. Third, if they are certain that they have to pay higher tax at home country, the level of incentive is low.

In short, the table above implies that residence principle has clearly bigger opportunity to attract capital inflow. If, say, the foreign country holds source principle, the home country would have absolute advantage in attracting foreign residents to move their investment inside, since the foreign residents will not be obliged to pay any taxes. Next, suppose the foreign country holds residence principle, making the foreign residence compare the tax rate imposed by both country. In such case, if  $t_{rN} = t_{rD}^*$ , the expected return of investing such capital of home and foreign country will be the consideration of the capital owner deciding where to put the capital. In this scenario, the incentive is to invest at home country is at moderate level, certainly below the previous scenario.

Now, suppose the home country holds source principle, while the foreign country also uses source principle. Similarly, foreign residents will compare the home country's tax rate and foreign country's tax rate to make investment decision. It becomes direct tax rate competition between home country and foreign country. Again, in this case, the level of incentive is at moderate level. But if the foreign country implements residence principle, the foreign residents will have to pay tax two times. This certainly discourages capital to flow inside the home country, making the incentive to invest at home country is low. If the home country holds residence principle, on the contrary, the foreign residents will only have to pay  $t_{rF}^*$ , no matter where they decide to put their capital. The incentive to invest in home country will be still at moderate level, nevertheless.

These scenarios provide us insightful information not only about the relation between tax regimes and the incentive level to attract capital, but also about improving welfare as general. Remind that from (5), the welfare is maximized through private goods and public goods consumption. By attracting capital inflow through residence principle, we should note that while private good consumption increases, the government revenue is reduced, since the foreign residents pay zero tax to the home country's government.

It appears that in determining which tax regime to be used, there is trade-off between maximizing public goods or private goods consumption. Unsurprisingly, nowadays, countries tend to shift to source principle. With this principle, the governments will just whether losing capital inflow but sustaining tax revenue (when foreign countries uses residence principle), or potentially gaining capital inflow with increasing tax revenue as well due to the increasing tax base (when foreign countries uses source principle). On the other side, if the home country prefer residence principle, capital will possibly attracted to flow inside – depends on foreign countries' tax regime, but the tax revenue will certainly not increase.

## 5. Policy Implication

The provided results inform us that in deciding optimal corporate income tax policy, there are two factors that should be of consideration: consumption on private goods and consumption on public goods. In maximizing these two, the government tries to attract capital inflow, which can be perceived as both tax base and job creator. In considering optimal tax policy, the government tries to seek the best option of corporate income tax, whether in terms of its rate or its regime, in which public goods consumption and private goods consumption could be trade-off. Hence, in effort to maximize the society's welfare, several policy implications can be inferred as follows:

### a. Lowering corporate income tax rate?

It clearly appears that capital are attracted to move to countries with lower income tax rate, so that in tax competition, the winner is the one who can manage to apply low corporate income tax rate. Does it mean, for large developing countries, lowering corporate income tax rate increases economic welfare? To enlighten the answer, the government should consider with broad perspective.

Recall that through ZMW model equated in (5), country's welfare is function of consumption on public and private goods. Suppose a large developing country lowers its tax rate. The effect to the country's welfare then can be breakdown as follows. First, remind that public goods consumption is reflected by tax revenue, which is equal to  $T$ . By lowering the corporate income tax rate, it simply means that  $T$  is reduced. The impact to  $W$ , however, is uncertain. Despite through KK framework lower tax rate incentivize capital inflow, such occurring will also depend to the tax regime hold by the home country and its competitors.

If the tax regime hold by the home country is source principle, it means that the foreign residents only has moderate level, means that it is not certain whether will increase or not. However, if the regime used is residence principle, it certainly means that the home country will lose the tax base, since the foreign capital cannot be taxed. Since the impact to tax base is uncertain, the tax revenue of the home country will be more likely reduced. How about the impact to private goods consumption? It is uncertain, since it also depends on the tax regime, as previously explained.

The reason of lowering tax rate, however, might be justified if we look at broader perspective. Using KK model's perspective, lower tax rate does not only attract capital inflow from foreign residence, but also prevent capital outflow from home residents, especially in terms of profit shifting. That being said, lower tax rate can help to combat profit shifting practices and thus increase tax compliance of the country. Nevertheless, in pursuing tax compliance, anti-avoidance rule must be enforced, accompanied with effective tax administration.<sup>33</sup>

Hence, as a whole, for large developing country it is more likely that the welfare is reduced. It is because public goods consumption, which is highly valued for the country, is very likely reduced. Meanwhile, for the same case in the perspective of small country, the outcome can be different. That is why for large developing country, lowering corporate income tax rate in order to compete with small countries is not recommended.

#### **b. Differentiating the tax regime as well in order to attract capital inflow**

Remind again the impact of choosing tax regime using Frenkel's framework (1992) associated with ZMW model (1992), using residence principle might give bigger incentive for capital inflow. But it certainly means that tax revenue is reduced. Conversely, using source principle will lower other countries' capital to flow inside, but tax revenue will be still maintained. As capital importing country, large developing country has dilemma in deciding which tax regime in welfare-maximizing.

However, having more than one tax regime

can be useful for the country. Remind that from Table 1 that there are various scenarios consisting of combination of tax principles that can incentivize capital to be invested in the home countries. One can try, for example, implementing residence principle just for certain type of investment that are actively competed by other countries to pull the investment from the home country. For other type of investments that are included as comparative advantage, the country can maximize the revenue with implementing source principle.

This way, attracting capital inflow can be done efficiently. Since the decision of tax regime for certain type of investments can be taken separately from tax regime for other type of investment, bigger capital inflow and government revenue can be achieved. This is because certain type of investment can be associated with different country counterparts, who possibly use different tax regime. If the tax regimes are decided according to other associated countries' tax regime, the country's welfare can then be maximized.

#### **c. Implementing tax incentives**

From the theoretical framework provided, it is assumed that the type of investment is unitary, meaning that there is only one type of good, except in section 3.2. Competing the tax system directly other countries' tax system can be not only difficult, but also costly and thus redundant in sacrificing the whole system just to win a certain type of investment. Therefore, using tax incentive is certainly a better option.

As there are tendencies from developed economies to shift their tax regime into source principle<sup>34</sup>, developing countries should be alert in utilizing the opportunities that will arise. When the large economies are shifting to source base principle, then the firms are set to look to those countries to move their capital. This simply means that in this context, developing countries are competitor to each other as they posit themselves as capital-importing countries.

On the effort to boost investment inflow through optimal corporate tax policy, developing countries can utilize other instruments such as tax incentives. It would be useful if every type of the associated investment is linked with a specific tax policy, which are tailored in such a

33. Kristijaji (2015) found that anti-avoidance rule can effectively reduce profit shifting practices up to 72%, if supported by effective tax administration system. The magnitude is only 35%, however, if it is not accompanied with effective tax administration system. See B. Bawono Kristijaji, "Incentives and Disincentives of Profit Shifting in Developing Countries," MSc Thesis., Tilburg University, 2015.

34. Thornton Matheson, Victoria Perry, and Chandara Veung, "Territorial vs. Worldwide Corporate Taxation: Implications for Developing Countries", *IMF Working Paper*, No. 13/205 (2013): 3-18.

way in order to compete with other countries who have competitive tax policy for the same type investment. In other words, the corporate income tax rate is determined differently to maximize the capital inflow without sacrificing too much tax revenue.

However, this, in effect, brings more complexities and intensify the stiffness of the competition among them.<sup>35</sup> Empirically, these countries utilize the combination of tax holiday, exemption, special regimes creation with lower tax rate, through which they focus the competition more on the mobile capital.<sup>36</sup>

However, one should aware, tax competition through tax incentives might only exacerbate the condition for each countries. When countries uncontrollably promote such inducements, they will potentially motivate the possibility of race to the bottom.<sup>37</sup> It potentially leads to situation where they are worsening each other economic condition while hurting themselves.<sup>38</sup> That is why it is recommended for developing countries to not implementing too many tax incentives without considering the efficiency of the incentives, while concentrating more on improving the administrative aspect.<sup>39</sup> In fact, tax is only one of many factors for capital owners in considering where to put their investment.

**d. Creating onshore financial center with lower tax rate in order to attract capital inflow without harming the country's tax revenue**

If a government are to choose to compete actively with other countries, this option is a rational decision. This is because such instrument can be a fruitful way in order to improve a country's welfare from both private goods and public goods consumption. However, one should carefully notice that creating such territory has consequences.

First and foremost, this action shows that the country is not in line with common goal in fighting Base Erosion and Profit Shifting (BEPS) practices, especially common action formulated in BEPS Action 5.<sup>40</sup> Politically, this

implies that the country is not on the stance to prevent harmful tax competition. Secondly, this action contributes to exacerbate the harmful tax competition. This potentially invites other countries to also enter harmful tax competition by taking similar move. As a result beggar-thy-neighbor<sup>41</sup> condition becomes unavoidable. Third, one should also remember that the gain from this move will be not as much, since one of its competitive advantage, information secrecy, will not work if the home country will be involved in supporting Automatic Exchange of Information (AEOI).

If a country intends to utilize onshore financial center without being against tax coordination, proper legal and formal structure must be well designed. It is important so that this territorial is formed not to harm other countries' economic condition, and used for specific type of investments. The capital flowing to the territorial should also need to be made transparent, with the government being cooperative for AEOI implementation.

**e. For a longer-run purpose, initiating tax coordination with other countries**

As suggested by the mathematical findings, countries with larger population are shown to be less able to compete with smaller-size countries. By taking action coordinately, pareto improvement can be achieved, implying that the welfare of associated countries are increased. It is also recommended that to prevent worse-off condition for small countries, such tax coordination should be arranged in a way to set a minimum tax rate instead of deciding an exact agreed tax rate. Setting a certain level of tax rate will worsen the state of small countries.

**f. Linking the monetary policy as a complementary for tax policy in attracting capital**

Tax is just one of the factor considered by capital owner in deciding where to put the capital. The interest rate hold by a country is also one of the decisive factors in attracting investment. It is broadly argued that integrated financial market between countries is related to the corporate tax policy, especially in the context where monetary policies significantly increase capital mobility.<sup>42</sup> Rather than sacrificing tax

35. Michael Keen and Alejandro Simone, "Is Tax Competition Harming Developing Countries More than Developed", *Tax Notes International*, No. 28 (2004): 1317-1325.

36. S.M. Ali Abas et al, "A Partial Race to the Bottom: Corporate Tax Developments in Emerging and Developing Economies", *IMF Working Paper*, No. 12/28 (2012): 3-22.

37. Bruno Gurtner and John Christensen, "The Race to the Bottom: Incentives for New Investment", *Tax Justice Network*, (2008): 2-17.

38. Bruno Gurtner, "The Race to the Bottom: Incentives for New Investment?", *Tax Justice Network*, (2008): 3-17.

39. IMF, *Options for Low Income Countries' Effective and Efficient Use of Tax Incentives for Investment* (IMF Policy Paper, 2015).

40. OECD, *Countering Harmful Tax Practices More Effectively, Taking into*

*Account Transparency and Substance, Action 5 - 2015 Final Report, OECD/G20 Base Erosion and Profit Shifting Project*, (Paris: OECD Publishing, 2015).

41. Beggar-thy-neighbor is a condition where a country, in order to compete with other countries, tries to worsen other countries' condition in such a way that also harm its own condition.

42. Inga Rademacher, "Tax Competition in the Eurozone: Capital Mobility, Agglomeration, and the Small Country Disadvantage," *MPIfG Discussion*

policy solely in the competition, the government should also attract investment by monetary policy, which influence the rate of return of capital.

## 5. Conclusion

The diverse national tax system in the world economy can influence the way capital flow across country border. Free movements of capital have important consequence for corporate tax policy, which relates to how the government formulate the tax system. Countries cannot decide tax policies without taking into account other countries' tax system. Hence, what is at stake for countries now is whether to keep the delusional tax sovereignty by moving with uncoordinated acts with other countries, or, to admit that the sovereignty is distorted by globalized economy, thus recognizing that the best way to deal with recent economic situation is by taking coordinated actions.

We show that from rational decision making process, tax system is tailored in a way to maximize a country's welfare through private goods and public goods consumption. Without any tax coordination, Nash equilibrium is not at the pareto maximum state. By increasing tax rate together, every country can gain better off condition since capital owner is still in the same preference as before. This action is impossible to be taken without agreement between countries. If such move is only taken by few countries, any other countries can take advantage by keeping their tax rate in order to attract the capital flow into their countries. This enforces the perspective that tax coordination is a better way in dealing with globalized economy.

Accordingly, in maximizing society's welfare without tax coordination, a country tries to tailor its tax system to attract capital inflow. The function of capital under the framework is to enlarge tax bases and increase job creation, so that both public goods and private goods consumption can then be maximized. We show with Kanbur and Keen (1992) that different tax rate attracts multinational firms to shift their profit, causing the country with higher tax rate losing its tax base. They also show that large country is less able to deal with tax competition, since small country can lower its tax rate without losing much welfare. Then, through framework model constructed by Frenkel (1992), we show that the tax regime used by associated countries affects the amount of tax the firms pay, which affects the decision of capital owners in deciding where to put their capital.

Countries with low size of population is better equipped for tax competition. It is mainly because such tax-revenue loss caused by lowering tax rate can be

far outweighed by the capital inflow. Meanwhile, for bigger-populated countries, it becomes more difficult since losing more tax revenue could be very harmful for the welfare of the countries. It thus making them weaker in the 'race-to-the-bottom' competition. This explains why small countries are the ones who are reluctant to take united action in tax matters.<sup>43</sup>

The generated idea from such work not only open larger ground for further research on taxation, but also enlighten us to several relevant policy implications: first, considering the magnitude of impact from lowering tax rate in affecting country's welfare with broad perspective; second, implementing tax incentive wisely so that harmful tax competition can be prevented; third, creating onshore financial center with lower tax rate in order to attract capital inflow without harming the country's tax revenue; fourth, for a longer-run purpose, initiating tax coordination with other countries; fifth, linking tax policies with monetary policies as a complement to each other in order to attract capital inflow and minimizing capital outflow.

The theoretical framework developed in this paper gives us rational relevant choices in the perspective of large developing countries. Thus, the generated idea can also be applied to Indonesia, as one of large developing country. The policy recommendations suggested in this paper can thus be very helpful for the government to deal with the integrated economy in maximizing the national welfare.





Ensuring a Balanced Tax System

Menara Satu Sentra Kelapa Gading  
6<sup>th</sup> Floor Unit #0601 - #0602 - #0606  
Jl. Bulevar Kelapa Gading LA3 No. 1  
Summarecon, Kelapa Gading  
Jakarta Utara 14240 Indonesia  
Phone: +62 21 2938 5758  
Fax: +62 21 2938 5759  
[www.ddtc.co.id](http://www.ddtc.co.id)