Int. j. adv. multidisc. res. stud. 2022; 2(6):367-369

Received: 25-09-2022
Accepted: 05-11-2022

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Applying Game Theory to Solve the Phenomenon of Avoiding Double Taxation in Vietnam

Nguyen Thi Bich Phuong
Faculty of Economic Law, Phan Thiet University, Vietnam

Corresponding Author: **Nguyen Thi Bich Phuong**

Abstract
The process of economic globalization on the one hand leads to development opportunities for each country and the world; on the other hand, it also brings many challenges. Accordingly, multinational companies and transnational companies grow larger and larger, easily leading to the phenomenon of tax duplication in international investment. This forces countries to find ways to avoid double taxation. According to the OECD's interpretation, double taxation is divided into two categories: domestic and international. The article focuses on studying the application of Nash equilibrium game theory to solve the phenomenon of tax duplication in international investment from the case of Vietnam.

Keywords: Double Taxation, Tax Laws of Viet Nam, Nash Equilibrium Game

1. Overview of the Phenomenon of Double Taxation in International Investment

Concept

According to the OECD definition: Double taxation is the situation that if it is required to comply with the tax laws of each country, an entity (only) must perform tax obligations more than once for the same tax base (taxable income) in a tax payment period.

Causes of double taxation in International Investment

Double taxation in international investment is an economic phenomenon as well as a legal one. Therefore, the cause of the phenomenon comes from two sources, namely: economic origin and legal origin.

- Firstly, the cause of double taxation is from economic origin. It is due to the promotion of foreign investment activities of countries. One of the reasons to attract countries to invest is that they have low tax rates. Therefore, when businesses from one country move their investments to the other, they become tax payers of both countries.
- Secondly, the cause of double taxation is from legal origin. Every government needs to collect taxes to serve public expenditure and the right to collect taxes is the prerogative of each country. It is because of the difference in the tax laws of different countries for businesses that an income of an enterprise becomes subject to tax in many places.

2. Vietnam needs to continue to improve the policy of avoiding double taxation to create a nudge to attract Foreign Investment

Looking at Vietnam's striving goals, we can see the ambition to quickly get out of the lag. Accordingly, the goal is that by 2030, Vietnam will become a upper-middle-income country (GDP per capita is approximately $4,859, in 2017 prices) and by 2045, Vietnam will become a high-income country, (GDP per capita is approximately $12,642, in 2017 prices). However, at present, Vietnam is still in the group of low-middle-income countries, ranked 136th out of 168 countries. GDP per capita is only on par with Malaysia's 20 years ago. With such a starting point, as historical experience shows, our country is not easy to rise up and is very unlikely to catch up with previous countries, as well as very difficult to achieve the above expected goal. The budget of the Vietnamese government before 1975 used to rely mainly on external aid: *"With an economy producing few assets but with large monetary returns, with a budget deficit due to huge public expenditures on wages and operations, we should have collapsed because of hyperinflation. But we survived thanks to the external aid"*. After 1975, acknowledging the important role of FDI in the development of the national economy, on 28th August 2001, for the first time, the Government of Vietnam issued Resolution No. 9 on attracting more and effective development of FDI.

Thus, to achieve the goal set by the Government in the 6th session of the 13th National Assembly, Vietnam has to mobilize huge resources both in country and abroad. The mobilization of resources from outside of the country, may not be the only way, but at present FDI is the most important factor. Because, FDI can bring many different benefits – there are direct, visible benefits and there are indirect, invisible benefits. These benefits can be: helping to quickly strengthen the national financial potential, providing modern technology and management system, improving the competitiveness of the economy, promoting Vietnam's domestic enterprises into the orbit of global economic integration. The implementation of the policy of building an open economy, multilateralizing and diversifying the external economy, encouraging foreign investment in Vietnam as well as allowing Vietnamese investors to invest abroad, double taxation has become, is and will become a common phenomenon. Therefore, it is necessary for Vietnam to continue to improve policies for the FDI economy to meet the resource needs for the country's development strategy in the coming years. That requires appropriate supportive policies of the Government, in which the policy of avoiding double taxation on corporate income is considered as one of the important factors. In other words, we use the nudge - the policy of avoiding double taxation on corporate income - to attract FDI. It fits perfectly with Paul A. Samuelson's "vicious circle" and "outside nudge" theory.

3. Implications to solve the phenomenon of avoiding double taxation from game theory

Methods to solve the problem of double taxation are often chosen by countries, including: unilateral method, bilateral method, and multilateral method. For Vietnam, the method used is mainly the bilateral method (shown by the signing of agreements to avoid double taxation). If the signing of the Double Taxation Agreement is considered as a game, the player (the government) needs to study the Nash game.

Nash equilibrium theory is an economic theory named after the researcher who discovered it and also won the Nobel Prize in economics in 1994. The Nash equilibrium principle dates back to the time of Cournot, who in 1838 applied it to output-selecting competitive firms. The Nash Balance can be used in many aspects of life, from business strategy to home sales to war and the social sciences. Within the scope of his research, the author applies the Nash equilibrium model to the problem of tax competition between countries, specifically in the research problem of building corporate income tax rates.

In the context of international economic integration, countries (especially developing countries) tend to apply low corporate income tax rates to encourage capital accumulation and investment. This has led to tax competition between countries.

The phenomenon of tax competition is relatively comprehensively investigated in the studies of Zodrow and Mieszkowski (1986) [3]. These two researchers assume that with the goal of securing revenue, the government has taxed economic activities (taxpayers). From there, create differences between countries. Businesses can choose to move to countries with better business conditions. When businesses choose a country to set up their business, they will be interested in the profit rate after paying taxes for that place.

Assume that the economy has two countries A and B. The economic structure of the two countries is exactly the same. Taxes on businesses in the two countries are initially high tax rates (t_{high}). In order to attract businesses to his side, B will reduce the tax rate. When B does so, revenue will decrease due to lower tax rates, but will increase taxpayers by attracting more businesses. However, for A, B's tax reduction will affect A. Accordingly, capital moves away from A, increasing unemployment. A will respond by reducing taxes. The adjustment of tax rates between the two countries will stop when the Nash equilibrium is reached, where the tax rates in both countries are equal and equal to the low tax rate (t_{low}).

Table 1: Tax Competition Game in Nash Equilibrium

B \ A	T_{high}	T_{low}
T_{high}	t_{high} (K*/2), t_{high}(K*/2)	t_{high}(K*/2 - ΔK), t_{low} (K*/2+ ΔK)
T_{low}	t_{low}(K*/2+ ΔK), t_{high} (K*/2-ΔK)	t_{low} (K*/2), t_{low}(K*/2)

Source: Dinh Ba Hung Anh, compiled by author – 2020, 2022

Where:

K* is the capital ownership at the beginning of the two localities.

ΔK is the change in capital ownership under tax competition.

The numbers before the comma in the table above are local A's interests.

The numbers after the comma are in the local interest B.

The balance of the game is shown in the lower right box.

The Nash strategy in this game is (t_{low}, t_{low}).

The rows and columns in the table above both describe high and low tax rates. Initially both countries applied high tax rates, so the tax collected in both countries was t_{high} (K*/2), t_{high}(K*/2).

If B reduces taxes, firms switch to B to invest, so the tax revenue is t_{low}(K*/2+ ΔK). And, in A, the tax collected is only t_{high}(K*/2 - ΔK).

Conversely, if A reduces taxes, the tax revenue is t_{low}(K*/2+ ΔK), and B collects the tax amount of t_{high} (K*/2- ΔK). Thus, the best situation in the Nash equilibrium in this case is that both reduce taxes, and the tax collected in A and B is only t_{low} (K*/2), t_{low}(K*/2). Since the tax rates in the two countries are ultimately the same, neither side benefits over the other in terms of taxpayers. However, the reduction in tax rates has resulted in a reduction in revenue for both countries. Obviously, this is an unexpected method of competition because the competing parties have reduced the budget of each country as well as the entire economy. In summary, tax competition by reducing tax rates can lead to economic activity being concentrated in countries with low tax rates and not on countries with high labor productivity. Therefore, tax cooperation is a solution that needs to be studied for countries to solve this problem.

4. Conclusions and suggestions

The trend of economic globalization forces countries to trade and cannot close their doors, because the policy of seclusion inhibits the development of society. Therefore, the phenomenon of double taxation in international investment will continue.

To solve the phenomenon of double taxation, Vietnam signed its first tax agreement in 1992 with Australia. Up to now, the total number of tax agreements that Vietnam has signed with countries/territories is 80.

However, considering the actual situation and the Nash equilibrium game theory, Vietnam should have some solutions:

- Join the common tax rate with countries as recommended by OECD.
- Develop an appropriate roadmap to join the Multilateral Agreement on Taxation.

5. References

1. Andreasa, Enni Savitrib. The Effect of Tax Socialization, Tax Knowledge, Expediency of Tax ID Number and Service Quality on Taxpayers Compliance with Taxpayers Awareness as Mediating Variables. Science Direct, 2^{nd} Global Conference on Business and Social Science – 2015, Bali, Indonesia, 2015.
2. General Statistics Office of Vietnam. Press Release of Social and Economic of 3 quarter and 9 Month of 2022. Statistics Press, 2022.
3. George Zodrow R, Peter Mieszkowski. Pigou, Tiebout, Property Taxation, and the Underprovision of Local Public Goods. Journal of Urban Economics. 1986; 19:356-370.
4. Ministry of Planning and Investment and Japan International Cooperation Agency. Study on FDI promotion strategy in the Socialist Republic of Vietnam, 2003.
5. Nguyen Hoang Tien, Nguyen Minh Ngoc, Dinh Ba Hung Anh. Sustainability of Coastal Tourism Development: Comparative Analysis of Vietnam's Northern and Southern Provinces. Journal of Southwest Jiaotong University, 2020; 55:6.
6. Osborne MJ, Rubinstein A. A Course in Game Theory. The MIT Press, 1994.
7. Office of the General Director of Taxation. Thesis on finance and taxation, 1972.
8. Web portal of the Organization for Economic Cooperation and Development. Available at: https://www.oecd.org (8-Now-2022)
9. Website of the Ministry of Finance of Vietnam. Available at: https://mof.gov.vn. (8-Now-2022).