Journal of Accounting & Management Innovation
Vol. 6 No. 1, January 2022, pp. 182-

# COMPARATIVE STUDY OF TAX INCENTIVES IN INDONESIA, MALAYSIA, AND THE UNITED STATES OF AMERICA TO SUPPORT RESEARCH AND DEVELOPMENT

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**ABSTRACT**

Studies found that R&D help promoting a country's economic growth. It is important for Indonesia to consider this as a long-run solution to escape middle-income trap since Indonesia's R&D spending has been below 1% every year. Further studies call for tax incentives as a solution to this problem. The purpose of this study is to compare different tax incentives schemes for R&D, along with giving recommendation to implement those. The approach in this study is qualitative descriptive method with literature review and secondary data. Indonesia provides R&D incentives as additional incentives to other schemes such as investment incentive schemes. However, a new regulation has been formed, *PP No. 45 Tahun 2019*, to provide R&D based tax incentives which gives 300% deduction on eligible R&D expenses. Yet, the eligibility has not been issued until now. R&D based tax incentive schemes in Malaysia have come to a fruitful success for its brink to reaching high-income country status. Malaysia provides 200% deduction for eligible R&D expenses, tax holiday and investment tax allowance for R&D companies and in-house R&D. Contrarily, the US treat eligible R&D expenses as deductible expenses and give tax credit of 20% or below, determined by historical financial data. This study concludes that Indonesia should define R&D for tax purpose, quickly assess which industry and activities are eligible for 300% super deduction and take Malaysia as an example in the assessment. Finally, Malaysia should slowly reduce unfavorable tax incentives, which are losing potential income, and give other tax incentives which can be a win-win solution to both parties.

**Keywords: Tax. Incentives, Research and Development, Innovation, Economic Growth, Indonesia, Malaysia, the United States of America**.

***ABSTRAK***

*Penelitian menemukan bahwa penelitian dan pengembangan (litbang) dapat menaikkan perekonomian suatu negara. Hal ini dapat dipertimbangkan Indonesia sebagai solusi jangka panjang guna menghindari middle-income trap. Penelitian selanjutnya menyebutkan bahwa insentif pajak merupakan solusi untuk hal tersebut. Oleh sebab itu, penelitian ini ditujukan untuk membandingkan insentif pajak litbang, dan merekomendasi implementasi. Penelitian ini dilakukan dengan menggunakan metode pendekatan deskriptif kualitatif dengan tinjauan pustaka menggunakan data sekunder. Indonesia menawarkan insentif pajak litbang sebagai tambahan dari skema insentif pajak lainnya, seperti skema insentif investasi. PP No. 45 Tahun 2019 telah diterbitkan sebagai insentif pajak litbang yang memberikan super deduction sebesar 300% terhadap biaya litbang. Tetapi, syarat fasilitas tersebut belum diterbitkan. Di sisi lain, Malaysia telah sukses dalam implementasi insentif pajak litbang, dibuktikan dari status negara yang hampir mencapai berpenghasilan tinggi. Insentif diberikan dalam bentuk super deduction 200%, tax holiday, dan tunjangan pajak investasi untuk perusahaan litbang dan kegiatan litbang. Sebaliknya, biaya litbang di Amerika Serikat adalah deductible expense dan kredit pajak sebesar 20% berdasarkan data histori keuangan. Penelitian ini menyimpulkan bahwa Indonesia harus menerbitkan definisi litbang untuk tujuan perpajakan, menentukan industri yang layak untuk fasilitas super deduction, dan mengambil Malaysia sebagai contoh penerapan insentif pajak litbang. Akhirmya, Malaysia direkomendasikan untuk mengurangi insentif pajak yang mengurangi pendapatan potensial, dan memberikan insentif pajak win-win solution untuk pemerintah dan wajib pajak.*

*Kata Kunci: Pajak, Insentif, Penelitian dan Pengembangan, Inovasi, Perkembangan Ekonomi, Indonesia, Malaysia, Amerika Serikat*

## I. INTRODUCTION

It has been widely known that innovation is considered very important for a country to develop economic growth and its competitiveness in the last few years. It determines the increase in its people independence of their competitiveness, even if the world is facing globalization and the era of 4.0 industry (Kementerian Riset dan Teknologi, 2018). To support research and development (R&D) activities, governments around the world have been spending and giving tax incentives to give support to R&D activities in their own country both funded and from private sector, as shown in the table 1.1 below.

**Table 1 R&D Spending in Percentage of GDP (approximate value)**

| Country | Year | | | | |
|---|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 | 2017 |
| Israel | 4,08 | 4,20 | 4,28 | 4,42 | 4,58 |
| Korea, Rep. | 4,15 | 4,29 | 4,22 | 4,23 | 4,55 |
| Sweden | 3,31 | 3,15 | 3,27 | 3,26 | 3,31 |
| Finland | 3,29 | 3,17 | 2,90 | 2,75 | 2,76 |
| Japan | 3,32 | 3,40 | 3,28 | 3,14 | 3,21 |
| Denmark | 2,97 | 2,91 | 3,07 | 3,17 | 3,10 |
| Austria | 2,96 | 3,09 | 3,05 | 3,15 | 3,16 |
| Germany | 2,82 | 2,87 | 2,92 | 2,93 | 3,04 |
| **The US** | **2,73** | **2,74** | **2,73** | **2,77** | **2,80** |
| Belgium | 2,33 | 2,39 | 2,47 | 2,56 | 2,61 |
| **Malaysia** | | **1,26** | **1,30** | **1,44** | |
| **Indonesia** | **0,09** | | | **0,24** | **0,24** |

**Source: World Bank (2019)**
**Prepared by Writer**

Various R&D based tax incentives are offered by many countries in the world, promoting the importance of R&D to each country's economic growth. Those are provided in many different schemes, such as reduced tax rates, tax allowance, tax credits, tax deduction, tax exemptions, tax holiday, and VAT (Value-Added Tax) reimbursement (Ernst & Young, 2019). However, Indonesia, as an emerging market country, had not had any R&D based tax incentives offered to the economic players in the country before the issuance of *Peraturan Pemerintah No. 45 Nomor 2019*. Indonesia considered R&D costs as deductible expenses only, without any tax facility given specifically on R&D activities, as well as the clear definition and circumstances to determine R&D activities. On one hand, Malaysia, another emerging market country, has had R&D based tax incentives given under several circumstances. Contrarily, the United States of America (US) has given R&D based tax incentives, with some changes occurred in 2015 (Ernst & Young, 2019).

It is very important for Indonesia to concern R&D more in the economy as middle income trap (MIT) may occur if there are no technology-based innovations. Furthermore, in a study conducted by Teo, Loo, & Leong (2019), R&D investments are resulting a benefit in producing firms productivity., which is positive and significant, with positive elasticity. The increase in government funding and public sector participation, R&D is proven to strenghten their R&D capabilities, eneabling them to enjoy higher returns overtime. According to the World Bank (2019), Indonesia spent 0.24% of its GDP for R&D expenditures. When compared to one of its neighboring country, Malaysia, the difference is remarkably high. Malaysia spent around 1.4% of its GDP for R&D expenditures in 2016. However, the number was still incomparable to the USA's spending for R&D expenditures, which was around 2.77% of its national GDP, shown in the table 1.1.

To compare, Malaysia is chosen to be a comparison to Indonesia due to its similarity in terms of economic development and condition. According to International Monetary Fund (2017; Investopedia, 2019), Malaysia is similar characteristics with Indonesia in terms of low-to-middle per capita earnings, swift economic growth, high votality, less developed capital markets, higher return for investors. Therefore, both neighboring countries are classified as emerging and developing countries. Furthermore, according to the World Bank (2019) in table 1.1, Malaysia has no consistent reported R&D expenditure from 2009 until 2017. Having Singapore as a neighboring country sharing similar culture, for separation from Malaysia in 1965, it has reached the status of high-income country many years before, shown in the figure 1.1 on the next page. Hence, it becomes the reason why Malaysia is chosen as a comparison inspite the fact that Singapore is one of the R&D spenders leader.

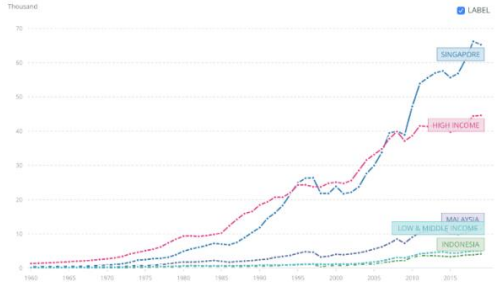


**Figure 1. 1 GDP per Capita (current US$) 1960-2019**

Source: World Bank (2020)

In the previous research, Tax Incentives and Fiscal Support to Encourage Innovation and Technological Advancement: A Comparative Study conducted by Jessika (2018), Indonesia's tax incentive policies are not focused to R&D activities, but R&D expenditures regulation has existed since 1990. Due to that, tax incentives given in the US is more attractive. Furthermore, R&D expenditure is not defined clearly. To solve this, Indonesia was recommended to adopt various tax incentive programs, such as tax-super deduction and tax credit for R&D activities conducted domestically.

## LITERATURE REVIEW

### Tax

It can be explained that tax is a obligatory benefaction to a country, payable by individuals and/or entities, forcible by law, without direct reward given, and is used as much as possible for its people prosperity.

According to Mardiasmo (2018), *Pajak adalah iuran rakyat kepada kas Negara berdasarkan Undang-undang (yang dapat dipaksakan) dengan tiada mendapat jasa timbal (kontra Prestasi) yang langsung dapat ditunjukkan dan yang digunakan untuk membayar pengeluaran umum (p.3).*

According to *UU PPh No. 36 Tahun 2008* article 4, taxable object includes income which is defined as any increase in economics capacity received or accrued by a taxpayer from Indonesia as well as from offshore, which may be utilized for consumption or increasing the taxpayer's wealth, in any name and form, except for:

1. aid, donation, including *zakat* received by *amil zakat* board or other *amil zakat* institutions established or approved by the government and eligible zakat recipients and gifts received by relatives within one degree of direct lineage and by religious,

educational or social organizations, or by small businesses including cooperatives determined by the Minister of Finance, provided that there is not any business, work, ownership nor control relationship between the parties concerned;

2. inheritances or legacy;
3. assets including an entity's cash receipt as referred to paragraph (1) subparagraph b of Article 2, traded off for either shares or capital contribution;
4. consideration or salary acceptance in the form of benefits related to employment or services accepted or attended from either a Taxpayer or the Government;
5. remittances by an insurance company to an individual i relation health, accident, life, or education insurance;
6. dividends or distribution of net profit accepted or accrued by resident limited corporations, cooperatives, state-owned companies, or local state-owned companies through ownership in enterprises established and domiciled in Indonesia, provided that:
   a. dividends distributed are taken from retained earnings from the company;
   b. limited liabilty corporations, state-owned enterprises, and local state-owned enterprises accepting the dividends must hold minimum a quarter of the total paid-in capital and obligated to have another active business besides the ownership;
7. contribution accepted or attended by a pension fund with the approval of the Minister of Finance, remunerated either by an employer or an employee;
8. income from investment of capital of the pension fund referred to in sub paragraph g in particular sectors, regulated by the Minister of Finance Decree;
9. profit distribution accepted or accrued by limited partnership member whose capital is not built up from shares, partnership, association, *firma*, or *kongsi*;
10. interest on bonds received or accrued by an investment fund company for the first year to fifth year starting from the establishment of the company or the business license granting
11. a venture-capital company's income received or accrued in distribution of net profit form of a joint-venture company enacted and managing business or enlisted in activities in Indonesia, provided that:
    a. the invested party is a small or medium-sized enterprise, or engaged in business sectors regulated by the Minister of Finance Decree; and
    b. the invested party's shares are not alternated in the Indonesia Stock Exchange

**Research and Development**

According to OECD (2015), research and development consists of inventive and structured work to improve knowledge span, including humankind knowledge, human culture and society, and to utilise new functions of knowledge available. Throughout history, research and development has changed people's lives and societies in many ways. One of them is to contribute for economic

growth by increasing productivity by inventions and improvements on existing technologies and knowledge.

There are three varieties of activities executed in R&D:

1. Basic Research
   This type of research covers the activities of obtaining new knowledge about the underlying phenomena foundation and perceptible facts by either theoretical or experimental work, with no particular direct-visible application or utilization.
2. Applied Research
   In this research type, original investigation engaged to obatin and acquire new knowledge, focusing on a particular practical target or objective.
3. Experimental Development
   Systematic work is defined in this type of R&D activity. Knowledge obtained from research and practical experiences is firstly drawn to produce additional knowledge. After that, it will be used to produce new products and services or improve the existing products and services (OECD, 2015).

As research and development activities are carried out, a manual was released by OECD for international conference in concern to productive R&D procedures and manuals, as well as useful outputs. Briefly, this manual acts as a technical guide in R&D activities. It sets standards for many aspects in R&D, for example, R&D survey and data collection conducts standards.

According to the manual, there are five principles when conducting R&D activities, listed as follows:

1. Aimed at new findings
   R&D activities are expected to give new knowledge as it becomes the objective of R&D projects. Any activity regarding copying, imitating, and reverse engineer for getting knowledge, is not included in being called an R&D activity.
2. Based on original, inapparent, concepts and hypothesis
   New ideas or concepts should be drawn by any R&D project from existing knowledge, excluding changes of routines on products or processes. Yet, new methods in performing existing tasks are included in R&D activity.
3. Final outcome uncertainty
   It is common for R&D to have uncertainty on multiple scopes, with no precise outcomes and costs determination. Moreover, there can be no exact prediction on costs and time spent on achieving expected results.
4. Planned and budgeted
   To conduct an R&D project, a systematic plan should be created and recorded, regarding both process and outcome of the project. The plan should be started by clear objective and funding sources, and then followed by its own human and financial resources, consisting management and report structure applied in large projects. However, one or more employees or consultants are sufficient for small projects with the objective of creating specific solution to a practical problem.
5. Led to possible reproduction of results
   New knowledge results from R&D should be able to be used

for future researches. These results include both successful results and fail results caused by inability to follow what has been initially planned (OECD, 2015).

Middle Income Trap (MIT) was a term initially announced by Gill and Kharas in 2007, referring to a condition where a possibility of stagnant economies on a certain level of income, in this case, middle income (Arezki, Fan, & Nguye, 2019). The term is a result of observation of general phenomenon in Latin America and the Middle East to economic slowdown probability in East Asia's emerging economies. They described the swift growth from low-income to middle-income levels, which was caused by low-cost labor, catch-up of primary technology, and capital and labor reallocation from sectors with low productivity, for instance, traditional agriculture to export-driven, high-productivity manufacturing is often followed by by less growth. As the rural labor force goes down and wages rise, the factor accumulation that once promoted high growth loses the capability, unless economic growth new sources are found, a country may find itself unable to compete with other countries, including both low-wage countries, with low labor cost, or high-income countries, with innovative technologies (Larson, Loayza, & Woolcock, 2016).

The so-called "trap" is evident in the figure 2.1 produced by Mendez and Ramoz as cited by Larson, et.al. (2016), below.

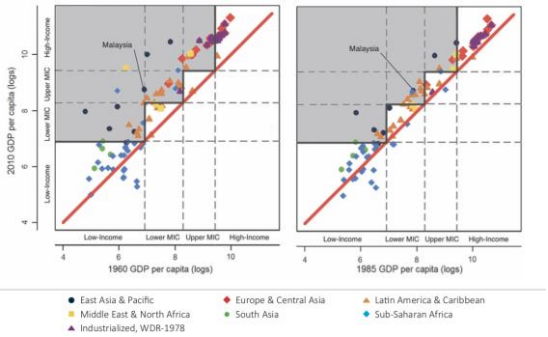


**Figure 2. 1 Middle Income Trap Evidence Graph**
Source: Larson, Loayza, & Woolcock (2016)

In the figure 2.1 shown before, assumptions of GDP per capita in based on constant 2005 USD, with regions based on World Bank classifications regarding all income levels. Income threshold definitions are listed as follows,

1. Low-income, includes GDP per capita less than $1,000
2. Lower Middle-income, includes GDP per capita between $1,000 and $4,000
3. Upper middle-income, is GDP per capita ranging from $4,000 to $12,500
4. High-income, includes GDP per capita above $12,500

A red 45-degree line in the figure 2.1 represents zero growth of GDP. The graph on the left side is the comparison of absolute GDP per capita in 1960 and that of 2010, indicating economic growth on most countries across all regions. On the contrary, the right side of graph comparing absolute GDP of 1985 and that of 2010 shows that there is similar pattern in recent times. This graph uses 91 countries as the samples, with 41 countries moved to higher-income levels during 1960-2010. These movements include 27 middle-income countries. Many of

these movements happen during 1985-2010 period.

There are four varieties of innovation as listed in OSLO Manual provided by OECD:

1. Product innovation
   A good or service is newly-formed or reamarkaby enhanced, enhancements in technical specifications, elements and materials, as well as software in the product, adaptability or other useful traits.
2. Process innovation
   Improvement or latest discovery in production and delivery, consisting remakable development in techniques, equipment and/or software.
3. Marketing innovation
   A new marketing method which involves remakable development in product outline or covers, product positioning, product marketing or pricing.
4. Organizational innovation
   A new method in organizing working methods, organization management or external affiliations (OECD, 2015).

Generally, governments give two types of support in R&D activities, namely direct support (R&D spending) and indirect support (tax incentives). Direct support comes in many different forms, such as grants, subsidies and loans, which shows positive impact to R&D outcomes, indicated by increased number of patents, sales of new product and introduction of new processes, occassionally. Moreover, direct support's effect is modest in firm's level. However, this also depends on firm size variety, aid magnaminity, project size aided, sectors, the kind of tax system, etc. (Petrin, 2018). In this era of globalization, there is a trend for developed country to spend on R&D. This can be proven through figure 2.4 shown below, comparing top 5 R&D spending (in percentage of GDP), Malaysia, and Indonesia.

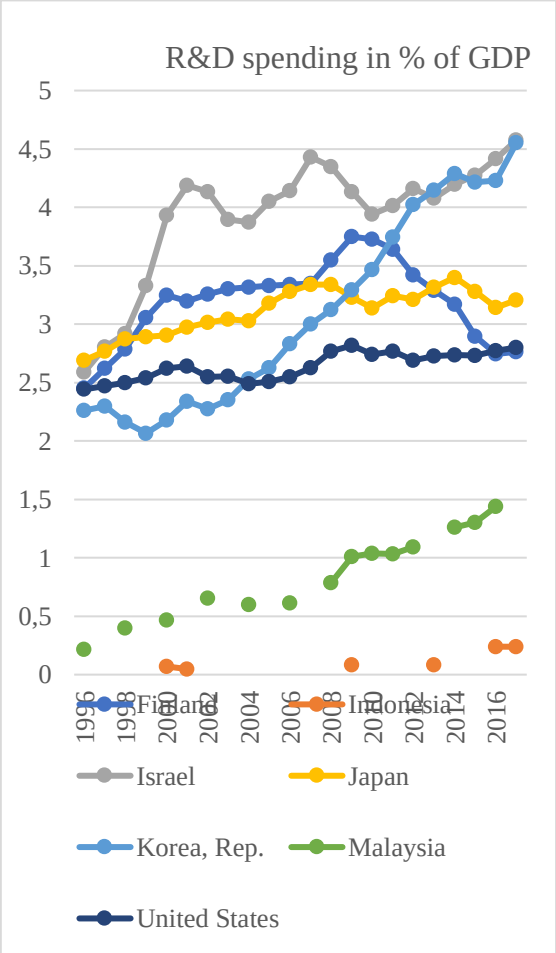


**Figure 2. 2 R&D Spending (% of GDP) in some Countries**
Source: World Bank (2019)
Prepared by Writer

Indirect support given from the government to support R&D activities is proven to have econometric evidence with positive reaction of corporations to tax incentives, indicated by increased R&D expenditures after tax incentives are given. However, in the long run, the effect might be moderate, meaning that a dollar

deducted in tax revenue equals to firm growth in R&D expenditure of below a dollar. It is also suggested that additionality effect is the greatest for SMEs, young firms, and R&D oriented firms. Yet, studies also review that the impact of tax incentives is dependent on the industry type, where lower productivity firms will receive greater impact, and more magnanimous R&D fiscal aid is linked with lower productivity, while on the aggregate level with lower employment growth (Petrin, 2018).

**Table 2. 1 Tax Incentives vs Direct Support**

| | Advantages | Disadvantages |
|---|---|---|
| Tax Incentives | 1. Less oppressive for corporations<br>2. Less costs for administrative purposes of planning, allocation and management<br>3. Generally less biased, particularly if not focused on any particular area of specialization. Encourage an increase of R&D across the whole spectrum of corporations (but can also be used to target specific groups of firms)<br>4. The decision on what is the most productive way to invest is on private sector<br>5. Technology neutral: not discriminative on activies on research, technology fields or manufacturing sectors<br>6. Government has lower possibility of failing in 'picking winners' (choosing the wrong R&D projects)<br>7. Making companies to provide better R&D activity report more accurately<br>8. Avoid corruption or fraud of funds and project-seeking activities by government's civil servants<br>9. Avoid an up-front budget for the delayed budget and costs | 1. Difficult cost allocation control<br>2. Greater risk of dead weight loss, meaning giving projects supports which must be performed etiher with support or without support.<br>3. Private corporations will execute highest private return rates R&D<br>4. Less additionality in condition for big firms<br>5. Possibility of corporations misinterpret or abuse other activities as R&D<br>6. Limited incentives for technology transfer<br>7. Possibility of competing tax incentives and rent-seeking by companies |
| Direct Government Support | 1. More appropriate to persuade high risk projects and to fuflill particular policy goals and challenges from society<br>2. Suitable to target R&D activities with the highest variance between social and private returns, i.e. highest spill overs<br>3. Corporation competition makes it certain that public resources are administered to the desired R&D projects | 1. Higher costs on administration for companies<br>2. Difficult to proceed administrative process for a huge number of applications<br>3. Firms may be discouraged on R&D |

| | | |
|---|---|---|
| | 4. Can be used to target particular technologies or scientific areas to contribute as a solution to sectoral slowdowns<br>5. Encourage cooperation and technology transfer between corporations<br>6. Better fund allocation control | projects not approved for direct government support<br>4. Risk of giving payments to lobbyists |

Source: Carvalho (2011; Ognyanova, 2017)

**Tax Incentives**

Tax incentives are usually given by a government to reduce or relieve the burden of having to pay tax. According to Black's Law Dictionary (2019), tax incentives refers to "…a governmental enticement, through a tax benefit, to engage in a particular activity, such as the contribution of money or property to qualified charity". This means that tax incentives schemes are used by a government to participate in a desired activity or practice by attracting or tempting a taxpayer by giving benefits fiscally, for example, money or property donation to a qualified charity.

As tax incentives are given to attract both foreign investment and R&D activities for economic growth, there are commonly four types of tax incentive according to Splitz (1983; Suandy, 2008), as follows:

1. Tax Exemption
   Tax exemption is regarded as the most common tax incentive given. However, there are several things needed to be considered by the government, for example tax holiday period and its investment turnover.
2. Tax Base Deduction
   It is usually defined as deductible expense for taxable income. General form of this incentive is accelerated-depreciation costs in forms of initial allowance, which is deducted in the initial investment year, or in form of annual allowance. Another example of tax base deduction includes loss carry forward or loss compensation, in which loss from previous taxable year, may be carried forward to the next taxable year within a limited time scope.
3. Tax Rate Reduction
   This reduction is usually given to certain entities and/or certain business activities.
4. Tax Deferment
   Tax deferment is usually given to specific cases, for example a case of not paying taxes up to a certain year.

However, not all forms of such tax incentives are commonly used for supporting R&D activities. There are two common tax incentives given for R&D activities, namely, tax credits and tax grants to certain R&D-related income (Bal, 2012). Tax credit is usually given either by volume-based credit or incremental basis. On the other hand, tax allowances are given by enhancing deduction method, meaning deductible expenses caused by R&D projects are further enhanced than the actual expense and accelerated depreciation method.

Before 2019, there was no specific R&D based tax incentives provided in Indonesia. This might lead businesses to conduct R&D activities abroad, given that other countries provide R&D based incentives. This is proven by an interview conducted by Martawardya

for several companies which conduct R&D activities. In the interview, some companies conduct R&D projects abroad due to more attractive tax incentives provided (Putera, 2018; Jessika, 2018).

Research and development expenditure for tax purpose is defined in *Keputusan Menteri Keuangan (KMK) Nomor 769/KMK.04/1990*. In article 1 of the *KMK*, R&D expenditure is defined as real expenses incurred during product development, including expenses to improve an entity's efficiencies, and technology advancement for process development. Basically, there are three categories in which R&D expenditure falls,

1. Expenses for R&D activities, which are regulated by Income Tax Law 1984 to be amortized or depreciated, should be amortized or depreciated according to the respective Income Tax Law Article 6 paragraph (1) b jo. Article 11;
2. Expenses for R&D activities, which are regulated by Income Tax Law 1984 as daily expenses, are acting as expenses on the perspective tax year in accordance to Income Tax Law 1984 Article 6 paragraph (1) a;
3. Other expenses for R&D activities excluding the previous two categories, such as consultant fee, are treated according to the existing accounting principle in taxation.

In addition, the latest income tax law, after being amended for four times, is *UU PPh No. 36 Tahun 2008*. After being amended, R&D expenditure is regulated to be deductible expense, in Article 6 paragraph (1), if R&D is carried out within Indonesia, with reasonable amount of expense, to discover new technology or system for the company's development. R&D expense for donation purpose is also included in deductible expense, if donated to R&D institutions.

After new investment is proven to be eligible for prescribed tax incentives in *Peraturan Pemerintah No. 78 Tahun 2019* and its attachments, a newly invested fixed asset can be depreciated twice as fast as normal depreciation. *Peraturan Pemerintah No. 78 Tahun 2019* Article 2 paragraph (2), accelerated depreciation and amortization useful life in fiscal is listed in the table 2.2 below.

**Table 2. 2 Accelerated Depreciation and Amortization**

| Category of tangible fixed asset | Accelerated useful life | Straight-line depreciation method | Declining balance depreciation method |
|---|---|---|---|
| Non-building | | | |
| Category 1<br>Category 2<br>Category 3<br>Category 4 | 2 years<br>4 years<br>8 years<br>10 years | 50%<br>25%<br>12.5%<br>10% | 100%<br>50%<br>25%<br>20% |
| Building | | | |
| Permanent<br>Non-permanent | 10 years<br>5 years | 10%<br>20% | |

Source: *Peraturan Pemerintah No. 78 Tahun 2019*

Previously, R&D is regulated to be only treated as deductible expenses. Now, Indonesia has finally released a new tax incentive

regulation, to be exact on June 2019, the only one in regards of R&D activity, which is *Peraturan Pemerintah No. 45 Tahun 2019*. This government regulation was released and effective on June 2019. It regulates the addition of a few articles in the previous *Peraturan Pemerintah Nomor 94 Tahun 2010*, such as Article 29 and Article 30.

According to *Peraturan Pemerintah No. 45 Tahun 2019* Article 29C, taxpayers who conduct certain research and development (R&D) activities are eligible to enjoy a deduction for net income before tax up to 300% of the expenditures incurred for R&D activities. R&D activities referred in this article are R&D activities conducted in within Indonesia, which creates inventions, innovation, new technology mastery, and/or technology for industrial development to increase national economy competitiveness. However, these activities are meant to be conducted in Indonesia in a certain period of time to enjoy the facility.

**Tax Incentives for Research and Development: Malaysia**

Malaysia tax incentives are mainly regulated in the Income Tax Act 1967 (The Act), the Promotion of Investments Act 1986 (PIA), and Public Ruling 5 of 2004 as amended in 2008. In increasing the value chain of Malaysia and increase the quality of its manufactured goods exports, the government has given promotion and encouragement for R&D activities within the country actively. However, these incentives may be enjoyed within the eligibility as regulated in the Act and PIA (Ernst & Young, 2019).

Besides research grants, Malaysian government has provided a set of fiscal incentives to promote and support R&D activities. There are basically two types of tax incentives given additionally, double deduction and tax exemption for pioneer status (PS) and commerlization of R&D findings ,and investment tax allowance (ITA). These incentives are given to four categories, including approved R&D expenses, contract R&D company, R&D company, and in-house R&D. Additionally, companies which may be granted PS or ITA have certain activities to be carried out, as shown in appendices B. For commerlization of R&D findings, companies in Malaysia may enjoy 100% tax exemption for 10 years. Those enjoying must be at least incorporated in Malaysia, 70% owned by Malaysian, the commerlization is made during the first year of approval. For having a PS or ITA status, a company must be participating in promoted activities or products, determined the minister of Malaysia from time to time according to the Income Tax Act 1986. This ensures that there will be changes occuring on the promoted activities and promoted products, which will be updated according to the situation of the country, published by statutory order in the *Gazette*, as regulated in Section 4 of the Income Tax Act 1986. The changes can be made also on the specific areas the Minister is trying to cover, including favorable prospects for further development and insufficient facilities to encourage economic development. These are updated in the section 4 of the Income Tax Act 1986.

Approved R&D expenditure by the Malaysian MoF is able to enjoy tax incentives in form of 200% tax deduction (double deduction). This measure is taken under section 34A

and section 34B of the Act. Double deduction is provided for qualified research expenditure related to a business entity's research program conducted within Malaysia. The double deduction is made in the coming business adjusted income. In addition, double deduction can also be approved if the subject of the research program is not related to the entity's business activities carried out. Qualifying R&D expenditures consist of:

a. Raw materials for R&D project
b. Technical services
c. Costs of mobilizing
d. Salary and allowances of the R&D project related personnel
e. Costs of maintenance for research buildings and equipment
f. Equipment, machinery, or building rental costs used for research project

However, payments of royalties, licensing fees, etc, are not included in qualifying R&D expenditures for they are considered to be "purchased" research (ACCA, 2018). According to the section 34B, payments to both contract R&D company and R&D company are deductible as much as 200% of the expenditures incurred by the related company.

**Tax Incentives for Research and Development: The United States of America**

The US has long been supporting R&D activities in its soil to specific concerns such as addressing national defense, health, safety, the environment, and energy security; advancing knowledge generally; developing the scientific and engineering workforce; and strengthening U.S. innovation and competitiveness in the global economy. Federal obligations for research and development activities accounted for an estimated $121.5 billion in fiscal year 2018 (Pece, 2019). In addition to federal grant to support R&D, the US also provides tax incentives within its states for R&D activities, with certain eligibility requirements.

Tax incentives for R&D activities are given in forms of tax credit and tax deduction. Tax incentive in form of tax credit is legislated by Section 41 of the Internal Revenue Code (IRC), while tax incentive in form of tax deduction is regulated in Section 174 of IRC. Although those R&D based tax incentives have been regulated, state credits and deductions may vary due to a variety of regulations based on the statutory framework of each states.

The research credit has a limitation to a maximum of one fourth of the regular tax liability. Unutilized research credits can be carried back for 1 year and carried forward for 20 years. Furthermore, certain qualified small businesses, which have not more than $50 million of gross revenues during the first three years, are eligible for a credit claim against their federal payroll tax liability for up to $250,000 (Ernst & Young, 2019). This is applicable since the beginning of 2016, applying also to small start-up companies with gross revenues of not more than 5 million dollars for the credit year, and for any taxable year before five-taxable-year period ending with current taxable year without any gross receipts.

Tax deduction for QRA in the US is given as much as 100% of R&D expenses, except for depreciable asset acquisition, for regulated tax purposes. Tax deduction is avaibable in most of the US states. As regulated

in Section 174 of IRC, it is permitted for both in-house and contract expenses provoked for qualified research. Claims on a research tax incentive is not available if the R&D project is funded by any grant, contract, or any other third party, including a government entity (Jessika, 2018).

Futhermore in this section, the term product has an inclusion of any pilot model, process, formula, invention, technique, patent, or similar property, products to be utilized by the taxpayer in the business activities, and products deducted for sale, lease, or license. The exceptions for R&D expenditure include,

1. Quality control testing for materials and product
2. Surveys for efficiency purposes;
3. Management researches;
4. Surveys conducted for customer;
5. Marketing purposes, for instance advertising and promotions;
6. patent, model, production or process acquisition; or

Research related to written, historical, or similar projects (Cornell Law School).

## METHODOLOGY

The general approach in this study is qualitative descriptive method for its supports for a wide and rich descriptions of issues and deeper analysis into problems, with no experimental and statistical analysis method used. Method used in this study is case studies method, which focuses on collecting information about a specific object, event or activity. A case study aims to a clear insight of a problem by examining the real-life situation from various angles and perspectives using multiple data collection, such as evaluation of books, previous researches, journals, and etc. of the related topic (Sekaran & Bougie, 2016).

Unit data used in this study are the taxation laws and provisions, books, government records, published data, previous researches, journals related to the tax incentives for research and development activities, and people who engaged in the field of research and development activities. Although the main focus of this study is to compare tax incentives given by various countries for R&D activities carried out, it also explores elements regarding the topic, such as eligibility for receiving tax incentives, advantages and disadvantages of direct and indirect government support for R&D, middle income trap, and other implications.

Literature study is used for data collection in this study. Qualitative data in this study come from secondary data. The writer obtains the information through library research by reading, borrowing, and buying some books related to the title, which is about government support for R&D in several countries, especially tax incentives given for R&D activities. The book referred to in this study are books on taxes and tax laws, especially in term of tax incentives. For additional information, government regulations, Ministry of Finance regulations, articles from trusted sources (such as OECD, ACCA, Ernst & Young, the World Bank, etc.), published research journals, and public statements regarding tax incentives which are related to R&D are used in this study

for having wider knowledge to make an in-depth analysis.

This study is done based on a case study in which the development of the main issue and fact collection are operated by the writer without developing a hypothesis. The writer utilizes a descriptive method to analyze the data and the steps are shown, as follows:

1. Review and understand:
   a. Indonesian regulations regarding R&D, as regulated by *KMK No. 769/KMK.04/1990*, *UU PPh No. 36 Tahun 2008* Article 5, *Peraturan Pemerintah No. 78 Tahun 2019*, and *Peraturan Pemerintah No. 45 Tahun 2019*.
   b. Malaysian regulations regarding R&D, including the Income Tax Act 1967 (The Act), the Promotion of Investments Act 1986 (PIA), and Public Ruling 5 of 2004 as amended in 2008.
   c. The United States regulations regarding R&D, which include Section 41 and Section 174 of Internal Revenue Code (IRC).
2. Analyse the regulation and the benefits of R&D tax incentives, including tax deduction, tax credit, tax holiday and investment tax allowance, in each country's conditions
3. Evaluate and tabulate the differences of R&D based tax incentives given in Indonesia, Malaysia, and the US
4. Give the conclusion and recommendation of the study

## RESULT AND DISCUSSION

Tax incentives are viewed as a distortion for making investment decisions theoretically. Practically, they tend to be ineffective, inefficient, and more likely to be abused and corrupted. However, they are used by most countries to promote economic growth, because. economists do find that there is a correlation between tax incentives and investment in a country. There are many different R&D tax schemes provided, namely super deduction, investment schemes, tax holiday, tax allowances, etc. Designing these schemes needs to be thought throughout. Due to that, in avoiding the proneness of any abusive and corrupted behavior, the IMF, the World Bank, and OECD have provided some good reports on how governments should design tax incentives guide.

In the inauguration of the 7th president of the Republic of Indonesia on 20th October 2019, the president stated that Indonesia is expected to breakthrough middle-income trap (MIT) in 2045, which has been a problem for all middle-income countries (Thomas, 2019). According to the World Bank, the classification of countries by income level in 2019 falls on the categories in the table 4.1 on the next page.

**Table 4. 1 Country classifications by income level 2018-2019**

| Income Threshold | July 2019/$ | July 2018/$ |
|---|---|---|
| Low income | Less than 1,026 | Less than 996 |
| Lower-middle income | 1,026 – 3,995 | 996 – 3,895 |
| Upper-middle income | 3,996 – 12,375 | 3,896 – 12,055 |

| | | |
|---|---|---|
| High income | More than 12, 275 | More than 12,055 |

Source: World Bank Data Team, 2019

In country classification in term of income threshold, the World Bank classifies based on Gross National Income (GNI) per capita in US dollar by using the Atlas Method, which is used instead of normal exchange rate to reduce exchange rate fluctuation impact between countries to compare. The classification is reassigned on every July 1st based on the previous year's GNI per capita. The groupings, however, remain constant for the entire fiscal year (The World Bank, n.d.).

Based on the newest classification in table 4.1, Indonesia needs to reach around 4 times than what the country has already achieved. In realizing its vision, the Indonesian government, represented by *Kementerian Perencanaan Pembangunan Nasional (Bappenas)*, has targeted Indonesia's economic growth to be around 6% on average each year, as shown in the figure 4.1 on the next page.

This target is set to prepare for Indonesia to raise its level to high-income country in 2045. As stated by the Minister of Finance of Indonesia, Sri Mulyani, in the discussion of year-end national budget, Indonesia needs to reach 6% of economic growth each year as the preliminary condition to reach its target (Sukmana, 2019). By achieving this target, Indonesia is expected to reach GDP per capita of $6,010 by 2024, upgraded from lower-middle income country into upper-middle income country (Bappenas, 2019). However, Indonesia has been stagnant in term of year-on-year (YoY) economic growth around 5% in the past few years, as shown in the figure 4.2 on the next page.


**Figure 4. 1 Economic Growth of Indonesia 2015 – 2019**
Source: *BPS*, 2020
Prepared by writer (2020)

To counter this problem, the government has its attention on R&D carried out within its country. The target of Indonesian government, as recorded in *Rancangan Rencana Pembangunan Jangka Menengah Nasional (RPJMN) 2020 – 2024*, has recorded a plan to increase the R&D activities in Indonesia, by increasing government expenditure on R&D and scientific publications domestically and internationally. Furthermore, it was also mentioned that the ecosystem for innovation in Indonesia has not been created. As a result, the failure of creating such ecosystem leads to uncommercialized outcome of R&D yet.

As these incentives are provided in Malaysia, it has been growing in a pace towards high income country. The World Bank (2020) recorded that Malaysia has been in upper-middle income country for years. In fact, Malaysia's economic condition in 2018 reached $11,373, which needed around 8%

more in GDP growth to reach high-income status. According to OECD (2019), Malaysia had planned to reach high-income country status by 2020 with sustaining growth in Eleventh Five-year Plan, but with the current macroeconomic conditions, it has been postponed into 2024. On the other hand, Malaysia did experience a slow-down in its economic growth from 2018 to 2019, as shown in figure 4.3.

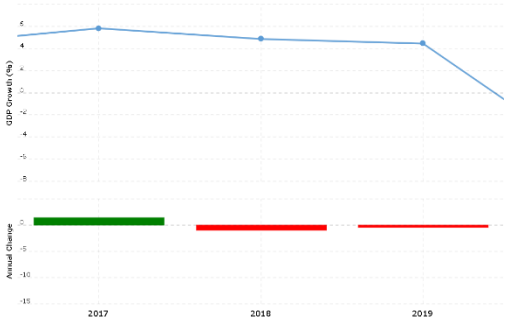


**Figure 4. 2 Malaysia's GDP Growth 2017 - 2019 (Constant Prices of 2015)**
Source: Department of Statistics Malaysia, 2020

Despite experiencing a slow-down in its economic growth, Malaysia is still very confident about reaching high-income country in 2024. According to Victoria Kwakwa, the World Bank vice-president for East Asia and Pacific, Malaysia is on track to cross its way to becoming high-income country, breaking through the income threshold of upper-middle income country (Roughneen, 2018). Furthermore, by looking at its 2018 GDP per capita, it is highly possible that Malaysia can reach high-income country status in the coming years.

As a country emerges, innovation is needed for improving a country's economy. Research and development are proven to be a way to increase the US economy as it provides a positive and significant impact to its GDP in the long-run, despite its ineffectiveness in its short-run GDP (Blanco, Prieger, & Gu, 2013). Furthermore, R&D activities are proven to have spillover effect, meaning a state's investment in R&D will have impact to other states. To note, a state's additional tax incentive for R&D may be different from other states in the US. This allows each state member to have a hold on what the state needs and how to support the R&D activities in each state, given the authority to regulate.

As time proceeds, it is claimed that the US government has been spending less and less, despite its economy growth with combination of three innovations for the past fifty years, namely computer, microchip, and the internet (Isaacson, 2019). In the beginning of George W. Bush's presidency, federal government funded R&D through universities and corporate labs. In the past, federal government heavily invested in basic research through R&D channels. However, there is a significant shrink that occurs during the past decade. On the other hand, this drop has been replaced with an increase from corporate research. Today, most of R&D funds are coming from the private sector. Surely, private sectors are potentially being provided R&D reliefs from the government. Private sectors in the US are dominant in conducting R&D activities. Listed in the table 4.2, on the next page, is the top 10 R&D spenders from 2017 to 2018 and the alignment to the revenue, including their R&D intensity.

Since 1981, the US has been providing tax reliefs on R&D activities done by firms in the states. The introduction of such tax relief in

1981 comes with different term, which was Research and Experimentation. It was developed to reward those who keep its technological advancement and innovations within the country. Since then, the tax credit has gone through 17 times of extensions and 8 times of expirations (Jessika, 2018). The US has shown its concern regarding R&D and innovations leading to economic growth. However, since its initial enactment of R&D tax relief, it has suffered uncertainties in its implementation. From 2000 to 2003, the first set of regulations were issued as a set of solution for the uncertainties, which include definition, and scope of qualified research and test requirements, which are lowered to let taxpayers enjoy the tax relief simpler (AlliantGroup, n.d.).

Later, in 2005, regular tax credit was provided, which was 20% tax credit on energy research conducted under a contract with qualified research universities, laboratories, consortia, and qualified SMEs. Alternative Simplified Credit (ASC) was then introduced in 2007, providing flexibility in computing the research tax credit, compared to the regular tax credit. ASC was first offered at 12% rate and 6% rate only for firms with no QRE in the prior 3 years before claiming. The rate was then expanded to 14% a year later. Any unused credit before 2006 was then temporarily available to be claimed in a limited manner until 2009. Soon, after that ASC is made permanent.

There is not a fixed and certain format of tax incentives that are perfect. The government should record the tax incentive benefits periodically in terms of duration and costs in forgone revenue (Zolt E. M., 2018). Effectiveness in the tax incentives should be evaluated based on the desired result. To cope with those issues, OECD has provided a guide report in designing tax incentives, with the steps listed below, namely:

1. Announcing all investment tax incentives and the objectives within the governing framework.
2. The tax incentives need to be regulated through the tax laws only
3. Consolidation of all tax incentives under the authority of one government body if possible
4. Ratification of all tax incentives through the parliament
5. Transparency tax incentives administration
6. Forgone tax revenue due to tax incentives and publication of tax expenditure
7. Periodic review of existing tax incentives continuance to assess their connection with desired objectives
8. Highlight the largest beneficiaries by specific provision in a regular statement of tax expenditures
9. Systematic data collection on overall effects and effectiveness of individual tax incentives.
10. Enhancing the cooperation of regions to avoid dangerous tax competition

Tax holiday is commonly used in developing countries. It benefits both tax authorities and investors in term of simplicity (Zolt E. M., 2018). Tax holiday forms vary from complete tax exemption of income taxes, other taxes, or the combination of both. In Indonesia, tax holiday is income tax exemption on *PPh Pasal 22* regarding import on

R&D for science advancement. In the neighboring country to compare, Malaysia, R&D tax holiday is offered for pioneer status contract R&D company, given a full exemption on statutory income for 5 years. However, the developed country in comparison, the US, doesn't provide any tax holiday scheme for R&D activities conducted in its country.

**Tax Credit**

Tax credit is regarded as a cross between tax holiday and investment tax credit. Instead of giving a fixed period, is related to the amount of taxes on the income earned (Zolt E. , 2015). This advantages in known cost of the government and no strong built-in advantage for quick-profit investments, without determining the amount of investments. However, this is not offered in both middle-income countries in comparison, Indonesia, and Malaysia. In the US, tax credit is offered for qualified research expenses. It comes in two different schemes, including regular tax credit, which is calculated by base amount on 4-year period as much as 20% standard rate, and alternative simplified credit, which is less complicated to be computed with base tax year determined 3 years prior to the tax credit claim with 14% tax credit rate.

## CONCLUSION

As this study compares and analyses different tax incentives in Indonesia, Malaysia, and the US, the followings are provided to conclude this study:

1. R&D is important to increase a country's economy condition and growth. It serves the country the productivity to compete with others, as well as the living standards of the people. Although it was said to be ineffective in supporting a country's economic growth, it is now believed to have great impact, yet no direct effect of R&D spending to an increase of an economy. To add, R&D does not provide an immediate reaction to the economy, but a long-term investment to achieve a country's competitiveness against others.
2. R&D based tax incentives should be designed well to be effective and efficient, targeted to desired industries or activities, and avoiding abuses that may arise during the implementation of the tax incentives. Moreover, the definition and activities regarding R&D should be defined clearly to avoid misinterpretation of the law.
3. R&D based tax incentives are generally given in super deduction, investment tax allowance, tax holiday, and tax credit. Super deduction, investment tax allowance, and tax holiday for R&D purposes are offered in Indonesia and Malaysia, while tax credit is given in the US.

**Table 5. 1 Table of Comparison**

| R&D Tax Incentives | Indonesia | Malaysia | The US |
|---|---|---|---|
| **Super Deduction** | Incurring 300% of R&D deductible expense | Incurring 200% of R&D deductible expense, including donations and payments to contract R&D and R&D companies | Deduction is only available as much as 100% of qualified research expenses (no super deduction) |

| | | | |
|---|---|---|---|
| **Investment Tax Allowance** | Additional 2 years period of loss-carry forward for certain eligible taxpayers for R&D activity conducted in Indonesia. | Contract R&D and R&D company with ITA status: eligible for 100% of deduction from qualifying capital expenditure against statutory income. In-house R&D activity for companies with ITA status: eligible for 50% of deduction from qualifying capital expenditure against statutory income. | N/A |
| **Tax Holiday** | Tax holiday on PPh Pasal 22 on R&D goods and services import. | Tax holiday is offered in full statutory income tax exemption contract R&D company with PS (Pioneer Status) for 5 years. | N/A |
| **Tax Credit** | N/A | N/A | Standard Tax Credit is offered at 20% to the base amount calculated based on spending measurement; ASC is offered at 14% of QRE. |

## REFERENCES

ACCA. (2018, March 31). *Tax Incentives for Research and Development in Malaysia.* Retrieved October 2019, from ACCA: Think Ahead: https://www.accaglobal.com/ubcs/en/student/exam-support-resources/professional-exams-study-resources/p6/technical-articles/incentives.html

AlliantGroup. (n.d.). *History of the R&D Tax Credit: How the R&D Tax Credit Evolved to be the Most Powerful Incentive for U.S. Businesses*. Retrieved March 2020, from Alliantgroup: https://www.alliantgroup.com/services/r-d-tax-credit-2/evolution-of-the-rd-tax-credit/

Arezki, R., Fan, R. Y., & Nguye, H. (2019). Technology Adoption and the Middle-Income Trap. *Policy Research Working Paper 8870*.

Badan Pusat Statistik. (2017, February 7). *[2010 Version] Y on Y Growth Rate of Gross Domestic Product by Industrial Origin (Percent) 2014-2016.* Retrieved from Badan Pusat Statistik Indonesia: https://www.bps.go.id/dynamictable/2016/08/05/1216/-seri-2010-laju-pertumbuhan-y-on-y-produk-domestik-bruto-menurut-lapangan-usaha-persen-2014-2016.html

Badan Pusat Statistik. (2019, November 6). *[2010 Version] Y on Y Growth Rate of Gross Domestic Product by Industrial Origin (Percent), 2017 - 2019.* Retrieved from Badan Pusat Statistik Indonesia: https://www.bps.go.id/dynamictable/2017/05/05/1255/-seri-2010-laju-pertumbuhan-y-on-y-produk-domestik-bruto-menurut-lapangan-usaha-persen-2017---2019.html

Bal, A. (2012). *Competition for R&D tax incentives in the European Union – how an optimal R&D system shall be designed.* Retrieved from Transnational Transaction Network: https://www.ttn-taxation.net/pdfs/prizes/AleksandraBalEssay2012.pdf

Bappenas. (2019). *Rancangan Rencana Pembangunan Jangka Menengah Nasional (RPJMN) 2020 - 2024.* Jakarta, Indonesia: Kementerian Perencanaan Pembangunan Nasional.

Blanco, L., Prieger, J., & Gu, J. (2013, November). The Impact of Research and Development on Economic Growth and Productivity in the US States. *School of Public Policy Working Papers, Paper 48*.

Cherif, R., & Hasanov, F. (2015, June). The Leap of the Tiger: How Malaysia Can Escape the Middle-Income Trap. *IMF Working Paper, WP/15/131*.

Cornell Law School. (n.d.). *Income Taxes.* Retrieved from Legal Information Institute: https://www.law.cornell.edu/cfr/text/26/1.174-2

Department of Statistics Malaysia. (2020, February 12). *Malaysia Economic Performance Fourth Quarter 2019.* Retrieved from Department of Statistics Malaysia: https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=100&bul_id=WWk2MDA3R1k1SlVsTjlzU3FZcjVlUT09&menu_id=TE5CRUZCblh4ZTZMODZIbmk2aWRRQT09#

Eggink, M. E. (2011). *The Role of Innovation in Economic Development.* University of South Africa. Pretoria: University of South Africa.

Ernst & Young. (2019). *Worldwide R&D Incentives Reference Guide 2019.* EYGM Limited.

European Central Bank. (2017, June 27). *How does innovation lead to growth?* Retrieved from European Central Bank: https://www.ecb.europa.eu/explainers/tell-me-more/html/growth.en.html

Goehle, B., & Chwalik, R. (2018). *The Global Innovation 1000 Study.* Retrieved from Strategy&: Part of the PwC Network: https://www.strategyand.pwc.com/gx/en/insights/innovation1000.html#VisualTabs1

Holtzman, Y. (2017, October). *U.S. Research and Development Tax Credit.* Retrieved from CPA Journal: https://www.cpajournal.com/2017/10/30/u-s-research-development-tax-credit/

Indonesia. (1990, July 14). *Keputusan Menteri Keuangan Republik Indonesia Nomor 769/KMK.04/1990: Perlakuan Perpajakan atas Biaya Penelitian dan Pengembangan (Research And Development) yang Dilakukan oleh Perusahaan.* Jakarta. Retrieved from Ortax: https://ortax.org/ortax/?mod=aturan&page=show&id=496

Indonesia. (2008). *Undang-undang Nomor 36 Tahun 2008 tentang Pajak Penghasilan.* Jakarta.

Indonesia. (2009). *Undang-undang Nomor 16 Tahun 2009 tentang Ketentuan Umum Perpajakan* . Jakarta.

Indonesia. (2015). *Peraturan Direktur Jenderal Pajak Nomor PER-31/PJ/2015 tentang Tata Cara dan Prosedur Pemungutan Pajak Penghasilan Pasal 22 Sehubungan Dengan Pembayaran Atas*

*Penyerahan Barang dan Kegiatan di Bidang Impor atau Kegiatan Usaha di Bidang Lain.* Jakarta.

Indonesia. (2015). *Peraturan Menteri Keuangan Nomor. 169/PMK.010/2015 tentang Penentuan Besarnya Perbandingan Antara Utang dan Modal Perusahaan untuk Keperluan Penghitungan Pajak Penghasilan.* Jakarta.

Indonesia. (2019, June). *Peraturan Pemerintah Republik Indonesia Nomor 45 Tahun 2019 Tentang Perubahan Atas Peraturan Pemerintah Nomor 94 Tahun 2010 tentang Penghitungan Penghasilan Kena Pajak dan Pelunasan Pajak Penghasilan dalam Tahun Berjalan.* Jakarta. Retrieved from PAJAK: https://www.pajak.go.id/sites/default/files/2019-07/PP_Nomor_45_Tahun_2019.pdf

Indonesia. (2019). *Peraturan Pemerintah Republik Indonesia Nomor 78 Tahun 2019: Fasilitas Pajak Penghasilan untuk Penanaman Modal di Bidang-Bidang Usaha Tertentu dan/atau Di Daerah-Daerah Tertentu.* Jakarta.

Investopedia. (2019, November 21). *Top 25 Developed and Developing Countries*. Retrieved from Investopedia: https://www.investopedia.com/updates/top-developing-countries/

Isaacson, W. (2019, January 3). *How America Risks Losing Its Innovation Edge*. Retrieved from TIME: https://time.com/longform/america-innovation/

Jessika. (2018). *Tax Incentives and Fiscal Support to Encourage Innovation and Technological Advancement: A Comparative Study*. Medan: Universitas Pelita Harapan.

Kementerian Riset dan Teknologi. (2018, January 17). *Pengembangan Iptek dan Pendidikan Tinggi di Era Revolusi Industri 4.0.* Retrieved from Kementerian Riset dan Teknologi / Badan Riset dan Inovasi Nasional Read: https://www.ristekdikti.go.id/kabar/pengembangan-iptek-dan-pendidikan-tinggi-di-era-revolusi-industri-4-0-2/

Kurniati, D. (2020, February 5). *Soal PMK Super Tax Deduction Kegiatan Riset, ini Kata Sri Mulyani*. Retrieved from DDTC News: https://news.ddtc.co.id/soal-pmk-supertax-deduction-ini-kata-sri-mulyani-18783?page_y=798

Kurniati, D. (2020, February 5). *Soal PMK Super Tax Deduction Kegiatan Riset, Ini Kata Sri Mulyani*. Retrieved from DDTC News: https://news.ddtc.co.id/soal-pmk-super-tax-deduction-kegiatan-riset-ini-kata-sri-mulyani-18783

Kurniati. (2020, June 26). *Pemerintah: Riset Bareng Asing Tetap Dapat Super Tax Deduction*. Retrieved from DDTC News: https://news.ddtc.co.id/pemerintah-riset-bareng-asing-tetap-dapat-super-tax-

deduction-21902?page_y=1590

Larson, G., Loayza, N., & Woolcock, M. (2016, March). The Middle-Income Trap: Myth or Reality? *Research & Policy Briefs from World Bank Malaysia Hub*. Retrieved from World Bank Hub Malaysia: http://documents.worldbank.org/curated/en/965511468194956837/pdf/104230-BRI-Policy-1.pdf

Lemanowicz, M. (2015). Innovation In Economic Theory And The Development Of Economic Thought. *Oeconomia*, 61-70.

Lumbangaol, H. E., & Pasaribu, E. (2018). Eksistensi dan Determinan Middle Income Trap di Indonesia. *Jurnal Ekonomi & Kebijakan Publik*, 83-97.

Macagno, F. (2010). Definitions in Law. *Bulletin suisse de linguistique appliquée*, 199-217.

Mardiasmo. (2018). *Perpajakan.* Yogyakarta: Andi Publisher.

OECD. (2010, November). *R&D Tax Incentives: Rationale, Design, Evaluation.* Retrieved from OECD: https://www.oecd.org/sti/ind/46352862.pdf

OECD. (2015). *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development.* Paris: OECD Publishing.

OECD. (2015). *Oslo Manual 2015: The Measurement of Scientific and Technological Activities.* Paris.

OECD. (2019, July). *OECD Economic Survey: Malaysia.* Retrieved from OECD: http://www.oecd.org/economy/surveys/Malaysia-2019-OECD-economic-survey-overview.pdf

OECD. (2019, November). *Measuring Tax Support for R&D and Innovation*. Retrieved from OECD: http://www.oecd.org/sti/rd-tax-stats.htm

Ognyanova, D. (2017, September). *R&D Tax Incentives: How to make them most effective?* Retrieved from European Commission: https://rio.jrc.ec.europa.eu/en/file/11226/download?token=ZCbqfH47

Pece, C. (2019, June 17). *Federal R&D Obligations Increase an Estimated 2.7% in FY 2018.* Retrieved from National Science Foundation: https://www.nsf.gov/statistics/2019/nsf19321/

Perskin, D. H., Rasiah, R., & Woo, W. T. (2017, August 31). Explaining Malaysia's Past Economic Growth and Future Prospects. *Jeffrey Cheah Institute on Southeast Asia Working Paper Series, 2*. Retrieved from Economic History Malaya: https://www.ehm.my/publications/articles/malaysia-the-challenge-of-avoiding-the-middle-income-trap

Petrin, T. (2018). *A literature review on the impact and effectiveness of government support for R&D and innovation.* European Union Horizon 2020 Research and Innovation.

Pricewaterhouse Coopers. (2020, January 13). *Worldwide Tax*

*Summaries.* Retrieved from PWC: https://taxsummaries.pwc.com/malaysia/corporate/tax-credits-and-incentives

Pricewaterhouse Coopers. (n.d.). *Worldwide Tax* .

Putera, A. D. (2018, May 8). *Insentif Tak Menarik, Perusahaan Pilih Riset di Luar Indonesia Artikel ini telah tayang di Kompas.com dengan judul "Insentif Tak Menarik, Perusahaan Pilih Riset di Luar Indonesia", https://ekonomi.kompas.com/read/2018/05/08/152547526/insentif-tak-menarik*. Retrieved from Kompas: https://ekonomi.kompas.com/read/2018/05/08/152547526/insentif-tak-menarik-perusahaan-pilih-riset-di-luar-indonesia

Radu, S. (2018, November 9). *The Big Spenders in Research and Development*. Retrieved from US News: https://www.usnews.com/news/best-countries/articles/2018-11-09/these-countries-are-the-top-spenders-on-research-and-development

Rashkin, M. D. (2007). *Practical Guide to Research and Development Tax Incentives: Federal, State, and Foreign.* Chicago: CCH.

Resmi, S. (2017). *Perpajakan: Teori dan Kasus.* Jakarta: Salemba Empat.

Roughneen, S. (2018, December 21). *Malaysia on track to developed country status, but has far to go*. Retrieved from Nikkei Asian Review: https://asia.nikkei.com/Economy/Malaysia-on-track-to-developed-country-status-but-has-far-to-go

Sekaran, U., & Bougie, R. (2016). *Research Methods for business.* Chichester, West Sussex, United Kingdom: John Wiley & Sons Ltd.

Sitepu, E. M. (2014). Tax Incentives and Fiscal Support to Encourage Innovation and Technological Advancement: A Comparative Study. *Journal of S&T Policy and R&D Management, 12*(2), 125-138.

Suandy, E. (2008). *Perencanaan Pajak: Edisi Empat.* Jakarta: Penerbit Salemba Empat.

Sukmana, Y. (2019, July 16). *Menurut Sri Mulyani, Ini Syarat RI Keluar dari Middle Income Trap Artikel ini telah tayang di Kompas.com dengan judul "Menurut Sri Mulyani, Ini Syarat RI Keluar dari Middle Income Trap", https://money.kompas.com/read/2019/07/16/154600826/menurut-sri-muly*. Retrieved from Kompas: https://money.kompas.com/read/2019/07/16/154600826/menurut-sri-mulyani-ini-syarat-ri-keluar-dari-middle-income-trap

Technology Tax. (n.d.). *Alternative Simplified Credit*. Retrieved from Research Tax Credit: https://www.technologytax.com/research-tax-credit/alternative-simplified-credit/

Technology Tax. (n.d.). *The Research Tax Credit*. Retrieved from Research Tax Credit: https://www.technologytax.com/research-tax-credit/research-tax-credit/

Teo, M., Loo, A., & Leong, D. K. (2019). Returns to Research and Development (R&D) among firms in Singapore. *Economic Survey of Singapore Third Quarter 2019*, 42-50.

The World Bank. (2020). *World Bank Country and Lending Groups.* Retrieved February 2020, from The World Bank: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

The World Bank. (n.d.). *GDP per capita (current US$) - Indonesia.* Retrieved February 2019, from The World Bank: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=ID

The World Bank. (n.d.). *How does the World Bank classify countries?* Retrieved February 2020, from The World Bank: https://datahelpdesk.worldbank.org/knowledgebase/articles/378834-how-does-the-world-bank-classify-countries

Thomas, V. F. (2019, October 23). *Lolos Middle Income Trap, Ekspektasi Jokowi yang Terlalu Tinggi Baca selengkapnya di artikel "Lolos Middle Income Trap, Ekspektasi Jokowi yang Terlalu Tinggi"*. Retrieved from tirto.id: https://tirto.id/lolos-middle-income-trap-ekspektasi-jokowi-yang-terlalu-tinggi-ekew

UNESCO Institute of Statistics. (2019). *How Much Does Your Country Invest in R&D.* Retrieved from UNESCO: http://uis.unesco.org/apps/visualisations/research-and-development-spending/

Van, N. H. (2017). *Tax incentive Policies and Private sector's Investments for R&D and Innovations in Vietnam.* University of Tampere. Tampere: University of Tampere.

World Bank Data Team. (2019, July 1). *New Country Classifications by Income Level: 2019-2020*. Retrieved from World Bank Blogs: http://blogs.worldbank.org/opendata/new-country-classifications-income-level-2019-2020

World Bank Data Team. (2020). *GDP per Capita (current US$) - Singapore, Indonesia, Malaysia, High income, Low & middle income.* Retrieved from The World Bank: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=2019&locations=SG-ID-MY-XD-XO&start=1960&view=chart

World Bank. (2019). *Research and development expenditure (% of GDP) - Indonesia, Korea, Rep., United States, Malaysia, Israel, Japan, Finland, Switzerland, Austria, Sweden, Denmark, Germany.* Retrieved October 2019, from The World Bank: https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?end=2017&locations=ID-KR-US-MY-IL-JP-FI-CH-AT-SE-DK-DE&name_desc=false&start=1996&view=chart

Zolt, E. (2015). *Tax Incentives: Protecting the Tax Base*. Department of Economic and Social Affairs. New York: United Nations.

Zolt, E. M. (2018, February). *Design and Assessment of Tax Incentives in Developing Countries.* Retrieved from United Nations: https://www.un.org/esa/ffd/publications/design-and-assessment-of-tax-incentives-in-developing-countries.html