EFFECTIVE TAX RATES UNDER VARYING TAX INCENTIVES

by

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Abstract

This paper presents a quantitative analysis of investment incentives based on the concept of the marginal effective tax rate for an investment. Marginal effective tax rates for a representative investment are calculated for tax incentives commonly found in developing countries. Both individual and incremental effects of incentives are calculated.

Certain incentives, like corporate tax holidays and investment tax credits, reduce effective taxation of investment substantially more than other incentives. Some incentives can significantly reduce or reverse the beneficial effect of accelerated depreciation. For example, when there is a tax holiday, the marginal effective tax rate under accelerated depreciation is higher than under straight-line depreciation. This results maintains in the presence of inflation. Thus, incentives may conflict with provisions of the regular tax code designed to achieve the same objectives. The interaction of incentives is important; one or two incentives can render others ineffective. For example, the tax holiday and import tax exemption eliminated the beneficial effect of the investment deduction.

An important objective of this study is to provide a common methodology for analyzing investment incentives across countries.
I. Introduction

Tax incentives are commonly used instruments of investment policy in many developing countries. Examples of often-used tax incentives are: favorable tax treatment of depreciation expenses; tax holidays of varying kinds, such as those on business income, sales taxes, import duties; carry-over provisions for losses; investment deductions; and investment tax credits. Also, there are tax incentives that are directly related to economic performance, such as tax credits for sales performance, wages, or overall value-added.

Studies of tax incentives for developing countries, such as those by Bird (1980), Sanchez-Ugarte (1985), Gandhi (1986), and Shome (1985), have focussed on the qualitative aspects of incentives. Agell (1986) presents a quantitative study of the effect of incentives on capital subsidization in several countries. Quantitative analysis of tax incentives is difficult because both the incentives and the tax systems in which the incentives are granted vary widely across countries.

This study presents a quantitative analysis of a typical set of tax incentives in a standardized setting for the purpose of comparing their effects. This analysis is based on the calculation of effective tax rates for a representative investment. After an introduction briefly describing the issues, the specification of the representative investment is given in Section II. The specific tax incentives that will be analyzed are described in Section II also. Individual and incremental effects of tax incentives (defined at the beginning of Section III) are presented in Sections III and
IV, respectively. The impact of incentives on the relative tax benefits of straight-line and accelerated depreciation is highlighted in Section III. The role of inflation in the analysis is examined in Section V. A summary and concluding observations are given in Section VI.

By way of illustration, a side-by-side comparison of typical tax incentives in East Asian countries is presented in the table given as Appendix A. These countries often use the same type of incentives but to varying degrees. It is important to emphasize, though, that the analysis will not be country specific. Instead, we analyze tax incentives as generic provisions that represent concessions or departures from ordinary taxation. 1

Tax incentives are designed specifically for investments in priority areas. Often, tax incentives are authorized as part of the investment promotion legislation of a country. The most preferred areas of investment are accorded the highest amount of incentives. Ordinary investments are taxed in accordance with the provisions of the regular tax code. These investments do not enjoy any special incentives, except those that are generally available to all enterprises. The regular tax code sets the overall level of taxation from which effective rates are reduced by incentives.

The objective of this paper is to analyze the effects of different types of tax incentives, starting from a common base of a given tax rate, depreciation schedule, capital gains treatment, interest deduction, and other regular tax provisions. We evaluate the different forms of tax incentives by incrementally calculating their effect on the marginal effective tax rate of

1. A quantitative comparison of the corporate tax systems in East Asian countries is given by Pellechio, Sicat, and Dunn (1987).
the firm. Some of these incentives are merely additive in their effects. In other cases, the incentives have a competitive effect, cancelling one benefit over another. This is partly due to the tendency of governments to introduce features in which there is a choice of one incentive over another. Sometimes, this is simply done by providing offsets of some benefits against other incentives availed.

A useful outcome of this exercise are the comparisons of various tax incentive regimes with ordinary enterprises, the so-called base case. Quantifying these differences can be useful to country policy makers. Any large disparities in the effective taxation of tax-incentive-induced investment and ordinary investment are likely to signal resource transfers that may not necessarily conform with longer run objectives or efficient resource allocation.

The justification for incentives, of course, is to reduce the risks for particular investments and to improve their profitability. Tax incentives can be powerful in differentiating the incentives to invest in particular activities. Whether tax incentives promote productive activity or not is a separate issue.

A set of terminology is often used to differentiate between degrees of promotion embodied in the tax incentives. For instance, in one country, a "promoted" investment receives special treatment compared to other investments. A finer distinction is to attribute degrees of preference, for instance, between very highly preferred and less preferred investments. Such is the case between "pioneer" and "non-pioneer" investments, whereby the pioneer investments are given a larger set of investment incentives compared to non-pioneer investments. In other cases, some new export industries receive also
even more preferential tax treatment, since export industries are seen as a high priority to development. In some countries, however, the special tax treatment of some exports is found essential because of the absence of equilibrium exchange rates and other favorable trade policies.

II. Basic Assumptions

In order to undertake the comparisons needed to evaluate various types of incentives, we follow the strategy of using a single representative investment, with a certain mix of assets, and utilizing a common corporate tax rate and tariff rate for imported machinery and equipment. Several assumptions are made in order to carry out the calculations. The representative investment is taken to be 40 percent building, 40 percent machinery and equipment, 10 percent vehicles, and 10 percent land. Replacement investment is undertaken at the rate of economic depreciation for each asset. Such replacement investment holds the real value of each depreciable asset constant. At the end of the tenth year the assets are sold at a nominal value that reflects their real value plus inflation over the ten years. Sale of the assets is included in the analysis to capture the effect of capital gains treatment. [See Pellechio (1986)]

The standard corporate marginal tax rate is 35 percent of taxable income. Statutory rates in many developing countries predominantly lie in the 30-40 percent range. The use of a single tax rate is convenient but also quite realistic. Depreciation follows the standard straight-line depreciation method with lifetimes (rates) of twenty years (5 percent) for buildings, 10 years (10 percent) for machinery and equipment, and 5 years (20 percent) for vehicles. The double-declining method based on the same lifetime is examined
also. Following standard treatment, land is not a depreciable asset. Carryover of losses is such a common feature of ordinary taxation that it hardly merits discussion as a tax incentive and, as mentioned, is included as part of ordinary taxation. It is assumed to be available for an unlimited number of years into the future for ordinary investment.

A rate of tariff duty of 10 percent is used for imports of machinery and equipment. The rate of duty on machinery varies across countries. The tariff for machinery and equipment tends to be low in contrast to the rates for other manufactures which are often high. Machinery and equipment are considered essential imports and therefore qualify for lower tariffs. Thus, a 10 percent duty is taken as a realistic rate.

The final assumption concerns the breakdown of imported and domestic components for the investment. For buildings, it is assumed that there is an (indirect and direct) import component of 20 percent with the rest being domestically procured. Investment in machinery and equipment and in vehicles is 75 percent imported and 25 percent domestically procured.

The quantitative effect of tax incentives is examined by calculating their effect on the marginal effective tax rate for the representative investment. The ordinary investment or base case (Case 1) does not avail of any tax incentives. The tax incentives that will be taken into account are as follows:

(a) Corporate income tax holidays: for five years (Case 2) or for eight years (Case 3). These periods are the common ones found in many countries;
(b) An investment deduction equivalent to 20 percent of the investment is available immediately (Case 4); an investment deduction is very similar to generous tax depreciation treatment.

(c) An investment credit equivalent to 20 percent of the investment (Case 5).

(d) An exemption on tariffs on machinery and equipment (Case 6). In many countries, the exemption from import duty extend to raw materials used in production. However, this was not included in the analysis.

(e) A tax credit on wages for the unskilled labor (Case 7); specifically, the tax credit is 10 percent of one-half of the wage bill. This is a type of tax credit favored by economists who want to direct tax incentives in favor of employment. For instance, International Labor Organization (1972) has suggested this in the literature.

(f) A tax credit based on net value added (Case 8); specifically, this is equivalent to 10 percent of the value-added. If a country had a VAT at 10 percent, this essentially creates a tax holiday from the VAT.

To compute the effects of these incentives on the marginal effective tax rate, incentives are applied one at a time. These calculations are made for two sets of depreciation deduction methods: straight-line and double-declining balance depreciation methods.
III. Individual Effects of Investment Incentives

There are two ways to calculate the effect of investment incentives. One way is to consider the individual effect of an incentive on the representative investment. In other words, no other incentive is present in the calculation. The second way is to calculate the incremental effect of an incentive when it is added to pre-existing incentives. There are numerous combinations of incentives for calculating such incremental effects. Instead of considering all combinations, a particular stacking order for introducing incentives was chosen in which the incremental effect of an incentive is calculated relative to the incentives that precede it in the stacking order. Individual effects are presented in this section and incremental effects, in Section IV.

Table 1 shows the individual effects of tax incentives on the marginal effective tax rate (METR) for the representative investment. The METR for the representative investment is 45.6 percent for straight-line depreciation and 42.5 percent for declining balance depreciation. The import duties cause the effective tax rates to exceed the statutory rate. World prices of imports are assumed to be fixed, which is standard for small countries. Thus, the incidence of import duties falls entirely on the firm.

The most powerful incentive is the 20 percent investment tax credit (Case 5). The investment credit is immediately available to reduce tax liability. The METR falls from 45.6 to 11.1 percent for straight-line depreciation and from 42.5 to 11.6 percent for double-declining balance. The reason the METR with the credit is higher for double-declining balance is that higher depreciation allowances reduce tax liability more and, as a result, reduce the effect of the credit. More of the credit is carried forward and
Table 1: INDIVIDUAL EFFECTS OF TAX INCENTIVES

<table>
<thead>
<tr>
<th>Case Description</th>
<th>METR Under SLD</th>
<th>METR Under DDB</th>
<th>(1)/35%</th>
<th>(2)/35%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statutory Rate, 35 percent</td>
<td>--</td>
<td>--</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Case 1, Ordinary Investment</td>
<td>45.6%</td>
<td>42.5%</td>
<td>1.30</td>
<td>1.21</td>
</tr>
<tr>
<td>Case 2, Five-Year Corporate Tax Holiday</td>
<td>29.3%</td>
<td>34.8%</td>
<td>0.83</td>
<td>0.99</td>
</tr>
<tr>
<td>Case 3, Eight-Year Corporate Tax Holiday</td>
<td>23.2%</td>
<td>28.0%</td>
<td>0.66</td>
<td>0.80</td>
</tr>
<tr>
<td>Case 4, 20 Percent Investment Deduction</td>
<td>33.1%</td>
<td>31.2%</td>
<td>0.94</td>
<td>0.89</td>
</tr>
<tr>
<td>Case 5, 20 Percent Investment Credit</td>
<td>11.1%</td>
<td>11.6%</td>
<td>0.31</td>
<td>0.33</td>
</tr>
<tr>
<td>Case 6, Exemption from Import Duty</td>
<td>37.0%</td>
<td>33.4%</td>
<td>1.05</td>
<td>0.95</td>
</tr>
<tr>
<td>Case 7, 10 Percent Credit for Wages</td>
<td>40.1%</td>
<td>36.7%</td>
<td>1.14</td>
<td>1.04</td>
</tr>
<tr>
<td>Case 8, 10 Percent Credit for Value Added</td>
<td>29.7%</td>
<td>29.1%</td>
<td>0.84</td>
<td>0.83</td>
</tr>
</tbody>
</table>
the higher capital gains under double-declining balance outweighs the effect of the credit.

The corporate tax holidays come next in magnitude of effect. Of course, the longer tax holiday the greater the effect. The effective tax reduction implied by an additional 3 years of tax holiday from the 5-year is about six percentage points.

Turning to the incentives that are related to value-added, the net value-added incentive (Case 8) creates a larger reduction in the METR's than the incentive for low-wage workers (Case 7). The reason for this is simply the coverage of the incentive. Net value added, aside from including all wages paid (which is higher than the value for the low-income wage bill), also has the other components of value added, interest payments, rents, and profits. The low-wage incentive (Case 7) covers only one-half of the wage bill (by assumption).

Straightline Versus Double-Declining Balance Methods of Depreciation Deductions

The schedule of depreciation allowances is an important determinant of the METR for an investment. As a general rule, accelerated depreciation lowers the METR. However, as in the case of the 20 percent investment tax credit, this general rules does not apply in the presence of certain investment incentives.

Table 1 shows that the double-declining balance method of depreciation generally reduces the METR. However, the reduction is not significant in some cases. For the 20 percent investment tax credit (as mentioned) and tax holidays, the double-declining balance method produces a higher METR than
under straight-line depreciation. The presence of strong incentives at the beginning of the investment reduces the effect of large depreciation allowances in early years. Simply put, accelerated depreciation produces large deductions when they are not needed. As a result, depreciation allowances are carried forward and their present value is reduced. This enhances the effect of the taxation of the higher capital gains that result from accelerated depreciation.

Thus, accelerated depreciation can be beneficial for investment when it is compatible with the other tax incentives in force. However, a corporate tax holiday or investment tax credit can nullify the benefit from accelerated depreciation because larger deductions in early years are of little value.

IV. Incremental Effects of Investment Incentives

Incremental effects of incentives are examined by adding one incentive on top of another. More specifically, the effect of incentives are calculated with the five-year tax holiday and import tax exemption for machinery and equipment already in effect.

Table 2 presents incremental effects of incentives. These computations are again undertaken for straight-line and double-declining balance depreciation. The percentage point decreases in the marginal effective tax rate are given in the last two columns of the table.

Case 9, the five-year income-tax holiday and import tax exemption for machinery and equipment, is used as the reference point for all calculations shown in Table 2. The effect of the tax holiday and import tax exemption for machinery and equipment is enough to wipe out the effect of some incentives. For example, the 20 percent investment deduction does not reduce the marginal
Table 2. INCREMENTAL EFFECTS OF TAX INCENTIVES

<table>
<thead>
<tr>
<th>Tax Incentive Combinations</th>
<th>(1) METR SLD</th>
<th>(2) METR DDB</th>
<th>(3) Ratio of Statutory (1)/35%</th>
<th>(4) Ratio of Statutory (2)/35%</th>
<th>(5) Decrease in METR (SLD)</th>
<th>(6) Decrease in METR (DDB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statutory Rate, 35 percent</td>
<td>--</td>
<td>--</td>
<td>1.00</td>
<td>1.00</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Case 2. Five-Year Income Tax Holiday (Base)</td>
<td>29.3%</td>
<td>34.8%</td>
<td>0.83</td>
<td>0.99</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Case 9. Case 2 + Import Tax Exemption of M &amp; E</td>
<td>19.9%</td>
<td>25.3%</td>
<td>0.56</td>
<td>0.72</td>
<td>9.4</td>
<td>9.5</td>
</tr>
<tr>
<td>Case 10. Case 9 + 20% Investment Deduction</td>
<td>19.9%</td>
<td>21.7%</td>
<td>0.56</td>
<td>0.62</td>
<td>9.4</td>
<td>13.1</td>
</tr>
<tr>
<td>Case 11. Case 9 + 20% Investment Credit</td>
<td>9.4%</td>
<td>14.4%</td>
<td>0.26</td>
<td>0.41</td>
<td>19.9</td>
<td>20.4</td>
</tr>
<tr>
<td>Case 12. Case 9 + 10% Credit for Wages</td>
<td>15.2%</td>
<td>20.4%</td>
<td>0.43</td>
<td>0.58</td>
<td>14.1</td>
<td>14.4</td>
</tr>
<tr>
<td>Case 13. Case 9 + 10% Credit for Value Added</td>
<td>8.4%</td>
<td>14.7%</td>
<td>0.24</td>
<td>0.42</td>
<td>20.9</td>
<td>20.1</td>
</tr>
</tbody>
</table>
effective tax rate. The investment deduction does not have an incremental effect because corporate taxes are already zero in the first five years due to the tax holiday.

The 20 percent investment tax credit produces a large drop in the marginal effective tax rate (Case 11). This follows from the fact that tax credits can be carried forward for five years. Also, the credit applies to replacement investment which, of course, contributes to its effect. Unless benefits are carried over, as is the case with tax credits, they are lost.

The reduction in the marginal effective tax rates are roughly the same, for the two methods of depreciation deduction. For reasons already discussed, the straight-line depreciation can produce lower METR's than double-declining balance. The acceleration of depreciation only leads to a loss of depreciation allowances because a tax holiday reduces the value of deductions.

V. Role of Inflation

The computations so far assume that there is no inflation. Tax incentives are often made partly to provide a hedge against inflation. Acceleration of depreciation deductions, the grant of initial investment allowances, and the favorable tax treatment of capital gains are examples of this.

In conformity with provisions in most countries, depreciation allowances are not indexed to the inflation rate, either fully or partially. Also, capital gains are taxed as ordinary income, when assets are sold (in year 10 for our representative investment). These features of taxation will raise the METR in the presence of inflation. In order to examine the effect of inflation, a 10 percent inflation rate is included in the METR calculation.
Table 3 shows the effect of a 10 percent inflation on METR's computed for the two methods of depreciation deductions. For the sake of comparison, the METR's at zero inflation rate are included in the table. Column (2) shows the METR at 10 percent inflation for all cases with straight-line depreciation. These rates are substantially higher than those in Column (1). Column (3) shows the METR for 10 percent inflation as a proportion of the zero inflation METR for straight-line depreciation. As can be seen, the METR rises by 51 percent for the five year tax holiday and 43 percent for the eight year tax holiday due to 10 percent inflation.

Inflation can cause a substantial increase in the taxation of investment, even with substantial incentives, due to the structure of the corporate tax system assumed in these calculations. This structure reflects the main features of tax systems found in many developing countries.

**Inflation and the depreciation deduction method: accelerated vs. straight-line.** Columns (7) and (8) compares METR's based on the straight-line method and the double-declining-balance method. Both columns present ratios of METRs based on the double declining balance method to the straight-line depreciation method computed for zero inflation (column (7)) and for 10 percent inflation (column (8)). The main result presented by these ratios is that accelerated depreciation (in the form of double-declining balance method) helps to reduce effective taxation in the presence of inflation (except in the case of the tax holiday). Columns (7) and (8) present this result from
Table 3: EFFECT OF INFLATION ON TAX INCENTIVES

<table>
<thead>
<tr>
<th>Case:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SLD t=35%</td>
<td>SLD t=35%</td>
<td>(2)/(1)</td>
<td>DDB t=35%</td>
<td>DDB t=35%</td>
<td>(5)/(4)</td>
<td>(4)/(1)</td>
<td>(5)/(2)</td>
</tr>
<tr>
<td>Infl=0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infl=10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case 1. Ordinary Investment</td>
<td>45.6</td>
<td>65.6</td>
<td>1.44</td>
<td>42.5</td>
<td>60.3</td>
<td>1.42</td>
<td>0.93</td>
<td>0.92</td>
</tr>
<tr>
<td>Case 2. Five Year Tax Holiday</td>
<td>29.3</td>
<td>44.3</td>
<td>1.51</td>
<td>34.8</td>
<td>46.7</td>
<td>1.34</td>
<td>1.19</td>
<td>1.05</td>
</tr>
<tr>
<td>Case 3. Eight Year Tax Holiday</td>
<td>23.2</td>
<td>33.2</td>
<td>1.43</td>
<td>28.0</td>
<td>35.9</td>
<td>1.28</td>
<td>1.21</td>
<td>1.08</td>
</tr>
<tr>
<td>Case 4. 20 Percent Investment Deduction</td>
<td>33.1</td>
<td>54.2</td>
<td>1.64</td>
<td>31.2</td>
<td>49.9</td>
<td>1.60</td>
<td>0.94</td>
<td>0.92</td>
</tr>
<tr>
<td>Case 5. 20 Percent Investment Credit</td>
<td>11.1</td>
<td>33.3</td>
<td>3.00</td>
<td>11.6</td>
<td>30.9</td>
<td>2.66</td>
<td>1.05</td>
<td>0.93</td>
</tr>
<tr>
<td>Case 6. Exemption from Import Duty of M&amp;E</td>
<td>37.0</td>
<td>57.2</td>
<td>1.55</td>
<td>33.4</td>
<td>51.4</td>
<td>1.54</td>
<td>0.90</td>
<td>0.90</td>
</tr>
<tr>
<td>Case 7. 10 Percent Credit for Wages</td>
<td>40.1</td>
<td>60.0</td>
<td>1.50</td>
<td>36.7</td>
<td>54.4</td>
<td>1.48</td>
<td>0.92</td>
<td>0.91</td>
</tr>
<tr>
<td>Case 8. 10 Percent Credit for Value Added</td>
<td>29.7</td>
<td>48.1</td>
<td>1.62</td>
<td>29.1</td>
<td>44.7</td>
<td>1.54</td>
<td>0.98</td>
<td>0.93</td>
</tr>
<tr>
<td>Case 9. Case 2 + Exemption from Import Duty of M&amp;E</td>
<td>19.9</td>
<td>34.8</td>
<td>1.75</td>
<td>25.3</td>
<td>37.2</td>
<td>1.47</td>
<td>1.27</td>
<td>1.07</td>
</tr>
<tr>
<td>Case 10. Case 2 + 20 Percent Investment Deduction</td>
<td>19.9</td>
<td>34.8</td>
<td>1.75</td>
<td>21.7</td>
<td>37.2</td>
<td>1.71</td>
<td>1.09</td>
<td>1.07</td>
</tr>
<tr>
<td>Case 11. Case 2 + 20 Percent Investment Credit</td>
<td>9.4</td>
<td>25.8</td>
<td>2.74</td>
<td>14.4</td>
<td>28.1</td>
<td>1.95</td>
<td>1.53</td>
<td>1.09</td>
</tr>
<tr>
<td>Case 12. Case 2 + 10 Percent Credit on Wages</td>
<td>15.2</td>
<td>30.8</td>
<td>2.03</td>
<td>20.4</td>
<td>33.2</td>
<td>1.63</td>
<td>1.34</td>
<td>1.08</td>
</tr>
<tr>
<td>Case 13. Case 2 + 10 Percent Credit for Value Added</td>
<td>8.4</td>
<td>24.2</td>
<td>2.88</td>
<td>14.7</td>
<td>27.5</td>
<td>1.87</td>
<td>1.75</td>
<td>1.14</td>
</tr>
</tbody>
</table>
another angle by showing that METR's for accelerated depreciation increase proportionally less with inflation over straight-line depreciation.

In the incremental analysis in which a tax holiday is supplemented by other incentives, the METR under double-declining balance is still higher than that under straight-line depreciation. However, there is a reduction in the gap between the two methods. This result is consistent with the fall in the relative value of the depreciation deductions as the nominal value of income rises with (in this case, 10 percent) inflation.

VI. Summary and Concluding Remarks

This study focussed on the relative effects of different tax incentives on a given corporate tax regime. This is a complicated issue, and we directed attention to the effects on the marginal effective tax rate facing the investor.

Aside from summarizing the findings of the study, it is timely to address other points related to tax incentives which relate to this issue.

This study compared the effects of various types of tax incentives commonly used in developing countries. A better understanding of the tax incentives systems in developing countries can lead to a more comprehensive reform of their entire tax structure. The method of analysis was to calculate the effect of different tax incentives on effective tax rates in a corporate tax structure that is representative of developing countries.

Some important general observations can be drawn from the results presented in this study. Certain incentives, like corporate tax holidays and investment tax credits, lower effective taxation of investment substantially more than other incentives. This happens because the tax benefits of these
incentives occur at the beginning of the investment where they have the highest present value to the investor.

The presence of incentives can significantly reduce or reverse the effect of accelerated depreciation which is widely regarded as being favorable for investment. If tax incentives have their effect at the beginning of an investment when accelerated depreciation is also supposed to have its effect, the benefits of the latter are reduced. The benefits can be so reduced that the higher capital gains resulting from accelerated depreciation outweigh them and effective taxation is actually greater than under straight-line depreciation.

The interaction of incentives is important. One or two incentives can render others ineffective. The examination of incremental effects of incentives showed that the five-year tax holiday and import tax exemption eliminated the beneficial effect of an investment deduction. When the benefits of tax incentives occur at the same time they become redundant. After a point policy-makers have to be careful about offering tax incentives that have no value.

Indiscriminate granting of tax incentives may only erode the tax base and not even promote the desired mix of investments. Lack of knowledge about the exact impact of tax incentives on the effective tax rates faced by investors, on the composition of overall investment, and on the substitution of factors of production can sometimes create an excessive number of incentive instruments.

It is important to recognize that investors may examine the tax regime after considering nontax factors. Investors may examine the regulatory environment and the stability of the political and economic situation before
deciding to invest in a country. If this is the sequence of decision making, tax incentives perform a secondary, albeit potentially significant, role.

An important objective in the design of tax incentives is that they not distort, to the extent possible, the use of factors of production, especially capital and labor. In other words, incentives should be as neutral as possible in their effect on the allocation of resources. Incentives that are tied closely to depreciable assets, like additional depreciation allowances or investment tax credits for machinery, can induce a substitution of capital for labor. Employment credits, of course, act in the opposite direction. A more desirable incentive with respect to neutrality might be a deduction or credit based on the value added of the investment activity.

The corporate tax holiday has the desirable feature that it does not discriminate between capital and labor. However, its rationale is questionable. If an investment is able to produce positive taxable income during a corporate tax holiday then the exemption appears to be merely a "tax windfall." This seems especially unjustified if the investment is profitable due to other tax incentives. It is simply not possible to assert that the exemption is valuable to investors and deny that revenue is being foregone from profitable investments.

Another aspect of tax incentives is the element of competition among countries. A country may feel compelled to offer incentives that follow the pattern of incentives in neighboring countries in order to stay "competitive." If investors get past political and other nontax factors and decide to invest in a certain region then tax incentives can be an important determinant for the selection of the country in which to invest.
This study analyzed tax incentives and provided some examples of issues and problems in a stylized framework. A comprehensive analysis of an entire incentive regime is a major undertaking and, for the sake of relevance, best done for an actual system in a country. An intended contribution of this study is to provide a useful methodology for such a country-specific analysis. Another objective of this study is to provide a common methodology for analyzing investment incentives across countries.
Bibliography


Appendix A

Comparison of Investment Incentives in East Asian Countries

THAILAND

General
- Incentives are provided under the Investment Promotion Law.

Approved Projects
- Exemption from Corporate Income Tax. 3 - 8 year exemption period, depending on size of investment, number of employees, foreign exchange earnings, use of domestic supplies, and location.
- Exemption or Reduction of Import Duties and Business Tax on M&E. Full exemption or 50% reduction on duties and business tax on imported M&E, if comparable M&E are not available from a domestic source.
- Reduction of Import Duty and Business Tax on Raw Materials. A maximum reduction of 90% on imports, if not available from a domestic source.
Pioneer Projects or Investments in New Technology

Labor Utilizing Projects

Locational Incentives

- The number of employees is an important criterion for tax exemptions granted for approved projects.
- Maximum reduction of 90% of business tax on sales of products for a period up to 5 years.
- Reduction of 50% of corporate tax for 5 years after the termination of a normal income tax holiday or from the date of income earning.
- Allowance to double the cost of transportation, electricity and water supply for deduction from taxable corporate income.
- Allowance to deduct from the taxable corporate income up to 25% of the investment in the costs of installing infrastructural facilities for 10 years from the date of income earning.
Exports

- Exemption of import duties and business taxes on imported raw materials and components.
- Exemption of import duties and business taxes on re-export items.
- Exemption of export duties and business taxes.

Exports (continued)

- Allowance to deduct from the taxable corporate income the amount equivalent to 5% of an increase in income derived from export over the previous years, excluding costs of insurance and transportation.

Other Incentives

- Double deductions and tax credits for expenses and investments for overseas marketing.

Notes

- Dividends from exempted income are exempt from taxable income.
- Sources of data are the IBFD (January 1984) and Thailand's Board of Investment, Procedures for the implementation of promoted projects.
MALAYSIA

General

The major tax incentives available for companies are contained in the Investment Incentives Act.

Approved Projects

- Investment Tax Credit. 25% (minimum) for capital expenditure. Additional 5% available for each of the following criteria: (a) location; (b) priority product and (c) local content.

- Increased Annual Depreciation Allowances. 3%, straight line method for industrial buildings. 40%, declining balance method for plant and machinery.

Pioneer Projects or Investments in New Technology

- Exemption from Income and Development Taxes. 2-year tax exemption, plus extensions based on location, priority product, local content, and size of the investment. Maximum exemption period is 8 years.
Labor
- Exemption from Income and Development Taxes.

Utilizing Projects
- 2-year tax exemption if the company employs a minimum of 50 workers over the entire relief period. Plus extensions for additional labor employed and criteria noted above. Maximum exemption period is 8 years.

Locational Incentives
- Exemption from Income and Development Taxes.

- 5-year exemption plus extensions for labor utilization, size of investment, local content, and priority products. Maximum exemption period is 8 years.

Exports
- Export Allowance. 5% of gross income from exports of domestically manufactured goods.

- Further exemptions are available, based on the typical criteria mentioned above.

Other Incentives
- Tariff Protection and Concessions.

- Free Trade Zones.

Notes
- Losses incurred during exemption periods may be carried forward to the end of the period.

- Dividends derived from exempt income are exempt.

- Source of data is the IBFD (November 1984).
SINGAPORE

General

- Accelerated Depreciation (33.3% SL). Available to manufacturing projects for plant and machinery.

Approved Projects

- Investment Allowance. A maximum allowance of 50% of the fixed capital expenditure is available.
- Tax Holiday for Expansion of Existing Companies. Tax relief for up to 5 years on the income derived from an approved expansion project.

Pioneer Projects

- Tax Holiday for a Pioneer Project. Tax relief for 5 to 10 years.

Investments in New Technology

- Tax Holiday for an Export Pioneer Project. The tax relief period is extended another 3 years on export earnings. (see Exports for further detail)
- Accelerated Depreciation for High Technology. 100% expensing of investments.

Labor Utilizing Projects
Locational Incentives

Exports

-Tax Holiday for Export Enterprises. Tax relief for 5 years on export earnings. May be extended to 15 years in exceptional cases. Export earnings must be at least 20% of total income and exceed S$100,000 annually.

Other Incentives

-Relief of Import Tariffs and other taxes. Only a few items are subject to tariffs, but M&E and raw materials not available from a domestic may be imported duty-free.

-Double Deductions on expenses incurred for overseas marketing and research and development.

Notes

-No special treatment of losses during tax holidays. Also, firms may choose to forgo accelerated depreciation during tax holidays.

-Dividends derived from exempt income are exempt.

-Source of data is the IBFD (November 1984 & earlier).
INDONESIA

General
- The Income Tax Law 1984 repealed much of the existing investment incentives. The incentives listed below have been issued since that time.

Approved Projects

Pioneer Projects or Investments in New Technology

Labor Utilizing Projects

Locational Incentives
- Tax-free Zone. Batam Island industrial estate.
Exports

Other

Incentives

Notes

- Source of data is the IBFD (October 1985).

PHILIPPINES

General

- The main statute providing investment incentives is the Omnibus Investment Code, as amended by the Investment Policy Act of 1983.

Approved Projects

- Credit on Net Value Earned. 5% credit, granted for 5 years. The base, NVE, is defined as

\[
\text{NVE} = \text{sales} - \left[ \text{raw materials} + \text{components} + \text{factory supplies} + \text{utilities} + \text{depreciation} \right].
\]

- Credit on Net Local Content. 10% credit, granted for 5 years. The base, NLC, is defined as

\[
\text{NLC} = \text{export sales} - \left[ \text{imported raw materials, components and supplies} + \text{specified indigenous} \right].
\]
commodities + exports' share of depreciation].

-Carry Over of Losses. Losses incurred during the first 10 years of operation may be carried forward up to 6 years.

-Tax Deferral on Imported M&E. 50% of import duties incurred during the first 5 years may be deferred. These taxes must be paid in equal installments over the 5 years following their original due date.

-Tax Credit on Domestic M&E. 100% credit equivalent to the import duties which would have been due, if the M&E had been imported. Available for first 5 years.

*The NVE and NLC tax credits are granted only to the extent that they exceed the sum of the deferral and credit on M&E.

Pioneer Projects or Investments in New Technology

-All of the benefits granted for an approved non-pioneer project, except the credit for NVE increases to 10% and the tax deferral on imported M&E increases to 100%. Plus,

-Tax Credit for Withholding Tax.
<table>
<thead>
<tr>
<th>Locational Incentives</th>
<th>All the benefits granted for non-pioneer (or pioneer, if project has pioneer status) projects. Plus, Investment Allowance. 100% of capital expenditures, limited to 30% of taxable income.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports</td>
<td>All the benefits granted for non-pioneer (or pioneer, if project has pioneer status) projects, except the tax deferral on imported M&amp;E increases to 100%. Plus, Exemptions and deductions related to export tariffs and the manner of exporting (eg, some special benefits exist for export trading companies).</td>
</tr>
<tr>
<td>Other Incentives</td>
<td>Investment Allowance for National Development Fund Certificates. Allowance is limited to 10% of taxable income. Available only to residents.</td>
</tr>
<tr>
<td>Notes</td>
<td>Certificates are awarded for tax credits. These certificates are used to pay any tax liabilities of the firm. They have a 10 year life. Source of data are the IBFD (January 1984) and Philippine tax law BP #391.</td>
</tr>
</tbody>
</table>
Although there are numerous incentives available, most of them are for very specific types of investment.

- Special Depreciation Measures. For companies filing blue returns, increased initial depreciation allowances are available for M&E which conserves energy or controls pollution. The increased allowances range between 18% and 30%.

- Special Depreciation Measures. For companies filing blue returns, increased initial depreciation allowances are available for factory buildings located in designated areas. The increased allowances range between 8% and 25%.
Exports

Other

Incentives

Notes

- Mainly Tariff Incentives. Local businesses have been protected in the past, but recently steps have been taken to reduce the tariffs.

- Source of data is the IBFD (November 1984)

KOREA

General

- Temporary Investment Tax Credit. 6% credit (10% in the case of an investment using M&E or materials from a domestic source) is granted on investment expenditures during designated periods of economic hardship.

Approved

Projects

- Special Depreciation for Key Industries.

Ordinary depreciation is increased 100% for investment in designated industries. OR

- Tax Credit for Investments in Machine or Electronics Industries. 3% credit on the investment. (5% if purchased from a domestic source)
Pioneer Projects or Investments in New Technology

- Tax Credit for Development of Technology. 10% credit on the expenditure for development of technology or manpower.

- Tax Credits or Special Depreciation for Investments using New Technology. 6% credit on investment using new technology or special equipment. (10% credit if purchased from a domestic producer) OR 20% to 100% (predominantly 50%) increases to ordinary depreciation.

Labor

Utilizing Projects

Locational Incentives

Exports

- Special Depreciation for Businesses Earning Foreign Exchange. The maximum increase to depreciation is 30%.
- Other

Incentives

- Tax Exemption on Income of a Foreign-Invested Enterprise. Share of total income equal to the share of foreign capital to total capital is exempt from taxes for a period of 5 years. The 5 year exemption period must occur within the first 10 years of operation.

- Accelerated Depreciation for a Foreign-Invested Enterprise. Increase to ordinary depreciation equal to 100% times the share of foreign capital to total capital.

- Source of data is the IBFD (July 1984).

HONG KONG

- General

  - Initial Depreciation Allowances.
  - Low Rate of Taxation.
  - Territorial Principle of Taxation.
Pioneer Projects or Investments in New Technology

Labor Utilizing Projects

Locational Incentives

Exports

Other Incentives

Notes - Source of data is the IBFD (November 1984).
General

-Tax incentives are promulgated by the Statute for the Encouragement of Investment.

-Reduced Tax Rate. Corporate income tax rate is 25% rather than 35%, for productive enterprises.

-Tax Holiday on Profits from Capital which Increases Productive Capacity. 4 year exemption from corporate income tax.

Approved Projects

-Tax Holiday. 5 year exemption from corporate income tax for specified industries.

-Exemption from Import Duties on M&E. Imported M&E, not available from a domestic source, are exempt from duties for initial investments and additions to capacity.

Pioneer Projects or Investments in New Technology

-Tax Holiday for Pioneer Projects. 5 year tax exemption. Plus the 4 year tax holiday on profits from increases in productive capacity.

-Accelerated Depreciation. Asset lives may be shortened by a third to a half of their normal
lives. This incentive is an alternative to the tax holiday.

- Reduced Tax Rate for Specified Capital or Technology Intensive Industries. 22% tax rate on corporate income.

Labor Utilizing Projects

Locational Incentives

Exports

- Exemption from Sales Taxes. Exemption from business tax and surtax on income from exports.
- Pioneer Industry Benefits for Approved Export Projects.

Other Incentives

Notes

Some Recent DRD Discussion Papers

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