

# Working Paper

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## Causes, Benefits, and Risks of Business Tax Incentives

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**IMF Working Paper**

Fiscal Affairs Department

**Causes, Benefits, and Risks of Business Tax Incentives**

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**Abstract**

**This Working Paper should not be reported as representing the views of the IMF.**

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This paper provides an updated overview of tax incentives for business investment. It begins by noting that tax competition is likely to be a major force driving countries' tax reforms, and discusses tax incentives as a possible response to this. This is complemented by other arguments for and against tax incentives, and by an illustrative analysis of different incentives using effective tax rates. Findings from the empirical literature on tax incentives are also presented. Based on the overview of theoretical and empirical findings, the paper then suggests a matrix of criteria to determine the usefulness of different tax incentives depending on a country's circumstances.

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## I. INTRODUCTION

**Tax incentives are common around the world and are constantly evolving.** Few public finance laws are passed without reference to special rules regarding a specific activity or circumstance. Instead of trying to analyze all of their possible manifestations, it is useful to adopt a narrower definition to allow a more thorough study.

**Tax incentives are common around the world and are constantly evolving.** Few public finance laws are passed without reference to special rules regarding a specific activity or circumstance. Instead of trying to analyze all of their possible manifestations, it is useful to adopt a narrower definition to allow a more thorough study.

**For the purposes of this paper, tax incentives are defined as all measures that provide for a more favorable tax treatment of certain activities or sectors compared to what is granted to general industry.** Under this definition, a general cut in the tax rate or a generous depreciation scheme applicable to all firms would not be considered tax incentives.<sup>2</sup> Incentives need not be part of a special code, they can be an integrated part of the tax law.

**The focus of this paper will be on those incentives which aim to encourage economic activity, particularly investment.** Under this premise, granting a tax incentive implies that the capital stock—either of some type or in aggregate—is considered too low and that either the tax system is the obstacle or other obstacles exist that can be compensated by the tax system. Other incentives exist, such as those which are not aimed at the real economy but at attracting reported profits or those aimed at improving social outcomes, for example, by encouraging education or saving for a pension. Moreover, incentives can be used to discourage activity, for example in case of overproduction, especially in the agricultural sector.

**Economists have often been skeptical about tax incentives and instead supported broad tax bases to enable low rates.** This paper attempts to provide an explanation for the continued popularity of incentives despite such advice. It argues that, even though the rationale for the advice remains valid, there are strong forces that drive countries to adopt tax incentives. Moreover, irrespective of whether one finds the arguments for tax incentives compelling, it would be useful to give advice on the proper design of incentives to those countries which are determined to maintain them, as their relative costs and benefits differ enormously.

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<sup>2</sup> Other definitions have been suggested, for example labeling any provision that lowers the after-tax cost of capital below the pre-tax cost as an incentive. Such a definition has a number of conceptual and practical problems, though. It would mean that most countries' corporate tax system would be considered a tax incentive, because the combination of interest deductibility and depreciation allowances often yields negative tax rates at the margin. Moreover, under this definition any measure that reduced the tax burden of an activity would not be  
(continued...)

### **Box 1: Typical Tax Incentives**

**Tax holidays:** Temporary exemption of a new firm or investment from certain specified taxes, typically at least corporate income tax. Sometimes administrative requirements are also waived, notably the need to file tax returns. Partial tax holidays offer reduced obligations rather than full exemption.

**Special zones:** Geographically limited areas in which qualified firms can locate and thus benefit from exemption of varying scope of taxes and/or administrative requirements. Zones are often aimed at exporters and located close to a port. In some countries, however, qualifying companies can be declared “zones” irrespective of their location.

**Investment tax credit:** Deduction of a certain fraction of an investment from the tax liability. Rules differ regarding excess credits (credits in excess of tax liability) and include the possibility that they may be lost, carried forward or refunded.

**Investment allowance:** Deduction of a certain fraction of an investment from taxable profits (in addition to depreciation). The value of an allowance is the product of the allowance and the tax rate. Unlike a tax credit, its value will thus vary across firms unless there is a single tax rate. Moreover, the value is affected by changes to the tax rate, with a tax cut reducing it.

**Accelerated depreciation:** Depreciation at a faster schedule than available for the rest of the economy. This can be implemented in many different ways, including a higher first year depreciation allowances, or increased depreciation rates. Tax payments in nominal terms are unaffected, but their net present value is reduced and the liquidity of firms is improved.

**Reduced tax rates:** Reduction in a tax rate, typically the corporate income tax rate.

**Exemptions from various taxes:** Exemption from certain taxes, often those collected at the border such as tariffs, excises and VAT on imported inputs.

**Financing incentives:** Reductions in tax rates applying to providers of funds, e.g., reduced withholding taxes on dividends.

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recognized as an incentive as long as some tax is levied at the margin, irrespective of how other activities are taxed.

**Tax incentives are granted for a wide variety of reasons, but this paper argues that tax competition is a particularly important force behind many of them.** This paper thus begins by a brief description of the competitive forces countries are facing and the possible responses to them (Section II). It argues that a system with tax incentives is not obviously the worst possible response to such pressures. Other reasons for business tax incentives include social goals, such as encouragement of economic activity in backward regions, which would lead to localized incentives.

**While it is possible to find circumstances under which certain tax incentives are justifiable, the case for most incentives remains doubtful.** This paper discusses criteria for evaluating tax incentives and provides an analysis of typical incentives used (Section III). It gives examples of situations in which incentives have no justification, such as in the presence of a location-specific rent, as well as examples where some, but not all incentives, may be useful. Unlike some previous work, this paper argues that reduced corporate tax rates, rather than accelerated depreciation, may be the best substitutes for tax holidays.<sup>3</sup> Moreover, even if tax incentives are potentially useful, superior policies may exist to address a specific issue.

**Empirical research on tax incentives shows that they sometimes work in attracting FDI, but it remains unclear whether they are beneficial overall.** A brief overview of the empirical literature (Section IV) suggests that incentives work only if certain pre-conditions are met, and provided the correct design is chosen. However, even then, the benefits remain doubtful if their costs are taken into account. Moreover, new FAD research (Klemm and Van Parys, forthcoming) finds that some incentives are successful at increasing FDI, but suggests that the additional FDI crowds out other investment, so that aggregate investment and growth do not improve.

**A number of previous studies on tax incentives exist, but this paper differs in a few important aspects.** Previous studies have already presented descriptions of tax incentives and of their likely costs and benefits.<sup>4</sup> This paper differs as follows: (1) the main argument of the paper is based on the pressures caused by tax competition, and tax incentives are mainly analyzed as one tool of competition, (2) effective marginal and average tax rates are used to illustrate the effects of the main types of tax incentives, allowing comparisons between incentives, even for investments that are expected to be rent-earning; and (3) the new and old arguments are combined to produce a set of criteria that can be used to evaluate tax incentives. Despite these innovations, the paper inevitably repeats many well-known points in order to provide a self-contained discussion of the issue.

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<sup>3</sup> This argument has also been made in an analysis of a reform in the Philippines (Botman, Klemm and Baqir, 2008).

<sup>4</sup> The main references are Bird (2000), Shah (2005), OECD (2001) and Zee, Stotsky and Ley (2002).

## II. THEORY—BROAD PRINCIPLES

The aim of this section is to address the question of whether tax incentives can be justified on theoretical grounds, and if so under what circumstances. It will abstract from the detailed effects of particular incentives, and their costs and benefits, which will be addressed in the following section.

### A. Background: Tax Competition

**One of the forces shaping tax policy in many countries is the need to maintain a competitive tax system in an increasingly globalized economy.** Tax competition refers to a process in which countries attempt to attract capital or taxable profits, by reducing taxes on capital.<sup>5</sup> Countries may also follow more complex strategies and attempt to attract an industry so as to establish a future locational advantage, similar as in the new trade theory.

**An important result of the theoretical tax competition literature is that small countries should not levy source-based taxes on capital income.** This is based on the assumption of capital mobility, which implies that the supply of capital is infinitely elastic for a small open economy. The supply of labor, however, is relatively inelastic, given its limited mobility. As a result, the marginal cost of raising taxes from capital always exceeds the one from raising taxes on labor, and hence only labor taxes are used.<sup>6</sup> The total amount of taxes raised would likely be lower than in a closed economy, because the cost of raising taxes from just one factor will be higher, because of increasing marginal costs of taxation.<sup>7</sup>

**The solution of applying residence-based capital taxes instead is not practicable.** A number of countries (e.g., Japan, U.K., U.S.A.) formally tax corporate income on a residence basis, giving credit for foreign taxes paid. This is, however, subject to many exceptions, such as deferral until repatriation. Sometimes tax treaties also contain tax-sparing conditions, which mean that investments that benefited from tax incentives are not subject to additional home country taxation.<sup>8</sup> Apart from the exceptions, home country taxes can easily be avoided. As a result only small amounts of revenue are raised on foreign-source income. A system of immediate foreign-source income taxation would be very difficult to enforce,

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<sup>5</sup> See literature surveys by Wilson (1999) and Fuest, Huber and Mintz (2005).

<sup>6</sup> For a formal model, see Bucovetsky and Wilson (1991).

<sup>7</sup> It is, however, also possible that the benefits of public goods increase in an open economy, e.g., because these address the increased insecurity for labor as a result of globalization. If this effect is strong enough, total tax revenues could increase, despite the higher cost of raising them.

<sup>8</sup> It is an interesting question why countries would grant tax sparing. This suggests that they either consider tax incentives in developing countries a useful development tool, or do not expect any revenue from foreign-source income anyway. Recently the OECD appear to be moving away from tax sparing, the US never granted it. See discussion in Toaze (2001).



given that profits are earned in foreign jurisdictions, which may not grant access to information. But even if it were feasible, it would probably lead to a major relocation of company headquarters to countries that exempt foreign-source income.

**In practice, countries appear to be able to continue applying source-based capital taxes.**

All advanced economies continue taxing corporate income, and tax revenues have remained relatively strong. This may simply follow from the fact that the stylized assumptions of the theoretical models do not hold in practice. In particular, capital may not be perfectly mobile. Hence, its supply may have become more elastic over the years, but not infinitely so. This would put downward pressure on capital relative to labor taxes,<sup>9</sup> but not necessarily lead to zero capital taxes. There are many reasons for imperfect capital mobility, including home bias, costs of relocation, political interference in major capital movements, or location-specific rents.<sup>10</sup>

**In the presence of economic rents, it may be possible to levy high capital taxes, depending on the type of rent.** Three types of rents should be distinguished:

- Location-specific, e.g., natural resources. Such rents can be taxed and there should be no interaction with other governments.<sup>11</sup> Even if other countries cut tax rates, a positive rent (present discounted value (PDV) net of tax) should be enough for an investment to be worthwhile.<sup>12</sup>
- Regional, e.g., scenery. Such rents cannot be taxed without regard to other countries. Regional cooperation, however, could allow taxation without capital leaving the regions. E.g., different island states could decide common taxation of tourism.
- Firm-specific, e.g., patents. Such rents are subject to full tax competition. Even if a project's PDV for a discrete investment project remains positive after taxation, investment will not take place, if the after-tax PDV is higher in another country.

**If the complexity of tax systems is taken into account, the effects of tax competition become less clear cut.** Most of the theoretical analysis focuses on the tax rate only. A small

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<sup>9</sup> See Haufler, Klemm, and Schjelderup (forthcoming) for evidence.

<sup>10</sup> One example for such location-specific rents are agglomeration rents as a result of industrial concentration. In their presence countries can maintain relatively high tax rates, although they would risk losing the agglomeration if they chose an excessively high rate (Baldwin and Krugman, 2004).

<sup>11</sup> This is true for known deposits, at the point of decision to invest. It is not necessarily true for exploration, where the effect of tax on a probability distribution of outcomes may cause exploration effort to be shifted from one jurisdiction to another.

<sup>12</sup> A possible exception occurs if only a few international firms possess the technology and expertise to extract the rent, in which case they may insist on a significant share of the rent in order to invest (Osmundsen, 2005).

part of the literature also considers competition in the tax bases,<sup>13</sup> but more complex tax systems, such as those with tax incentives are typically not considered, but there are a few exceptions: Keen (2002) considers tax competition in the presence of special regimes and argues that targeting reduced tax rates at the most mobile activities may be a rational response to tax competition, if not all capital is equally mobile.<sup>14</sup> Moreover, this would increase tax revenues compared to the case of uniform taxation. Janeba and Smart (2003) work with a more general model, in which limiting tax incentives is harmful when the global capital stock is fixed (as in Keen, 2002), but may otherwise be beneficial. Gugl and Zodrow (2006) consider the welfare effects of using tax incentives on more mobile capital. They find that, unless head taxes are available and unconstrained, the welfare effect of using tax incentives is theoretically ambiguous,<sup>15</sup> although simulations show that under reasonable assumptions providing incentives to mobile capital can be beneficial.

**Tax incentives may be an explicit tool of tax competition.** A country may, for example, wish to use taxes to attract mobile capital, but also face a strong revenue constraints and high tax collection costs from taxes on factors other than capital. In that case, an incentive that is targeted at new and mobile investment may appear an attractive solution, because it allows both a competitive tax system where needed, and provides revenue from existing capital and immobile activities (as long as leakages remain limited).

**Even if incentives have a purely domestic intent, they may have international repercussions and lead to tax competition.** A regional incentive, for example, whose aim may be to achieve a more evenly distributed development by supporting a backward part of a country, will not only affect the domestic allocation of production factors, but also change the relative benefits of producing the affected good in this rather than other countries. An even stronger example is the frequently used tax incentive for Research and Development (R&D). The aim of these incentives is to address the externality of this activity, namely the spillovers of some of the created knowledge to other firms. The presence of such an incentive is, however, likely to attract activity from abroad in addition to boosting domestic investment. And given the spillovers, this may even be a particularly worthwhile field of tax competition. So while there may already be a case for an R&D incentive in the absence of tax competition, its presence may cause pressures for a more generous one.

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<sup>13</sup> See Haufler and Schjelderup (2000).

<sup>14</sup> The argument is thus similar to the Ramsey (1927) argument that tax rates should be a function of the inverse demand elasticity. However, while in Ramsey the advantage of such a policy is to reduce distortions, in the Keen model, the advantage is higher tax revenue, while the world capital stock is assumed fixed.

<sup>15</sup> It depends on the complementarity of more and less mobile capital with labor. If the more mobile capital is also more complementary with labor, then beneficial treatment of this factor would lead to a less efficient tax system, and this effect can (but need not) outweigh the effect from the greater elasticity.

**Even in a simple analytical framework, the pressures from tax competition are complex, with different effects, depending on the mobility of activities and the amount and type of economic rents.** An optimal tax system would strike a balance between these forces by applying low taxes on mobile activities, including rent-earning ones, if these rents are firm-specific. Tax rates on immobile activities could be higher, in case of location-specific rents even very high, as long as they are levied only on the rents earned. The following section will look at different approaches to corporate income taxation to see how well they achieve these aims.

## **B. Possible Responses to Tax Competition**

### **Broad tax bases, low tax rates**

**Base-broadening rate-cutting reforms have been the most common ones, especially in advanced economies.**<sup>16</sup> A country with broad bases and low tax rates will be a relatively attractive place to locate capital for firms which expect to earn rents. This approach is therefore useful in attracting highly profitable multinationals (Devereux, Griffith and Klemm, 2002). There is, however, an unnecessary revenue cost in that activities yielding location-specific rents benefit equally. Moreover, this reform may make the tax system less neutral from a domestic perspective if the tax base is too broad, because even firms which earn less than the cost of capital will be liable for tax.

**Overall, this seems an appropriate reform strategy for an economy with few natural resources and a high share of multinational activity.** It would be less appropriate in a resource rich economy (unless that sector is taxed separately) or in one dominated by small, less profitable entrepreneurs.

### **Neutral corporate income taxes**

**Neutral corporate income tax systems only levy taxes on rents, leaving the normal return to capital untaxed.** The practical applications of such taxes include cash-flow taxes and systems with an allowance for corporate equity.<sup>17</sup> By taxing rents only, the tax base for such systems is smaller than for traditional measures of profits, which implies higher rates for the same revenue requirement. As only rents are taxed, this would not discourage any profitable investment in a closed economy, unless rates approach 100 percent. In an open economy, mobile firms with firm-specific rents would be discouraged to invest.

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<sup>16</sup> Developing countries appear to have cut rates only (Keen and Simone, 2004; Keen and Mansour, forthcoming).

<sup>17</sup> For an overview of cash-flow taxes see Institute for Fiscal Studies (1978), for ACE taxes see Devereux and Freeman (1991); for an overview of their practical applications, see Klemm (2007).

## **Abolition of the corporate income tax**

**The complete abolition of corporate income tax would be the most direct application of the theoretical result that small open economies should not tax capital income.** In the extreme case of perfectly mobile capital and immobile labor, this is clearly optimal. Moreover, any necessary increase in personal income taxation would not harm employees, as they also bore the corporate income tax.

**However, even in small open economies, the abolition of corporate income taxes would be fraught with problems.** First, the personal income tax may become more difficult to enforce in the absence of a corporate income tax, as the distinction between capital and labor income is not always clear cut.<sup>18</sup> In particular, self-employed individuals would be able to reduce their tax liability by incorporating. Second, despite the theoretical result on the tax incidence of the corporate income tax, the public and political perception may be that corporate taxes are borne by richer capitalists, which would make such a reform politically difficult.

## **High tax rates, narrow bases and lax profit shifting rules**

**Lax profit shifting rules would allow multinationals to face low tax rates, while still raising revenues from immobile firms, with the advantage of self-selection.** Under this approach, mobile firms would continue to find it attractive to operate in a high tax country, because they would simply shift their paper profits elsewhere, either by manipulating transfer prices or with the help of their financial structure (i.e., using more debt-finance in high tax jurisdictions). Ultimately, however, the ability to shift profits may not be much related to the actual mobility of operations so that this approach would have very high revenue-costs, as even firms in immobile activities would set up multinational operations to avoid taxes. Strengthening profit shifting rules, however, would jeopardize the investment of truly mobile firms.

## **A system with tax incentives**

**A system with tax incentives would allow attracting mobile capital and at the same time choosing a tax system for the immobile firms on the basis of national requirements.** Some tax incentives may thus paradoxically make tax competition less harmful, as there will be less downward pressure on general tax rates (Keen, 2002). There will be a host of problems, including attempts of immobile local firms to benefit from the incentives, distortions of the capital stock towards the mobile sector, increased complexity and reduced transparency due to different rules, etc. In some regions of the world, there would also be

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<sup>18</sup> A withholding tax on dividends at a rate close to the PIT rate would mitigate this problem, although reinvested earnings would continue to escape taxation.

legal impediments to such tax differentiation, notably in the EU. These drawbacks will need to be weighted against the advantage of being able to combine raising relatively high capital income taxes while remaining competitive for mobile activity.

**As all possible responses have their difficulties, a tax system with incentives is not obviously the worst choice.** This will depend on the costs and benefits of the incentives employed, including any general equilibrium effects. The next section will consider these issues in more detail.

### III. THEORY—DETAILED CONSIDERATIONS

Having considered at the most general level the cases where tax incentives may be a rational policy tool, this section will look at the costs and benefits of such incentives and discuss principles that should underlie the choice between them. This is followed by an assessment of existing incentives, both from the perspective of an individual country and of a region.

#### A. Costs and Benefits of Incentives

**Even if there is a case in principle for tax incentives, this will not help a policy maker, unless the costs and benefits of practicable incentive schemes are known.** This section will therefore look at the implication of specific incentives. This is necessary, not only for the choice between different incentives, but also for the more general question about the usefulness of incentives per se, because even if there is a general case for tax incentives, one may decide against their use, if none of the available incentives can achieve the aims, or if their costs are too high.

**The cost of tax incentives are wide-ranging and go beyond any immediate revenue loss.** Apart from revenue losses, they include distortions to the economy as a result of preferential treatment of investment qualifying for incentives, administrative costs from running and preventing fraudulent use of incentives schemes, and social costs of rent-seeking behavior, including possibly an increase in corruption.

**Even the pure revenue costs of incentives are difficult to quantify.** At one extreme, if incentives apply only to investment that would not have taken place otherwise, the cost of direct revenue forgone would be nil. At the other extreme, if incentives are purely redundant and have no effect on investment then the entire tax revenue waived makes up the direct revenue cost. In practice, the true amount of direct revenue losses is likely to be between these two extremes. It is, however, also important to consider indirect effects. Hence, even if taxes are waived on an investment that would not have taken place without incentives, there may be indirect revenues losses, if that investment crowds out other, more highly taxable, investment. On the other hand, if there is an increase in aggregate investment and activity, there may be revenue gains from this, such as from additional employment taxes or taxes on inputs.

**The benefits of tax incentives are even harder to assess.** Tax incentives are often used to achieve medium-term development objectives, which will be affected by many factors other than incentives. Hence, in the typical case of incentives, which are aimed at boosting investment and thus economic growth, it will be difficult to know what the growth performance in the absence of incentives would have been. It is even less clear, what would have happened under another tax reform, such as a general tax cut at the same revenue cost as the incentive. In the case of an incentive addressing an externality, it will also be difficult to assess how accurately this has been achieved. Ultimately, however, the benefit of incentives should be assessed in terms of higher investment and growth. This can either be achieved simply by generating more investment or indirectly by initially changing the distribution of investment towards activities with higher spillovers, and then achieving higher growth as a result of these.

**Any beneficial impact on investment by firms benefiting from tax incentives should be analyzed in light of the effect of aggregate investment.** Crowding out of other investment may be a serious problem, because this will occur through two channels. Apart from the usual mechanisms, e.g., through capacity constraints, there will be additional crowding out, because, under a given revenue requirement, a higher tax rate on investments not benefiting from incentives needs to be chosen, than would be necessary if there were no incentives. Unless incentives are well-aligned to the most mobile capital, the aggregate capital stock may not increase much.

**Cost-benefit studies of tax incentives are difficult to make and may be misleading if they systematically exclude general equilibrium effects.** Typically such studies count the direct financial costs from tax revenue given up and compare them to the benefits in terms of higher employment and activity and resulting tax revenues. Crowding out of other investment is usually not quantified, as this would be very difficult to do. Equally such studies typically cannot reveal whether investment was just relocated within a country or from one sector to another, or is genuinely additional. This may be acceptable if the cost-benefit analysis is undertaken at the local level or if the aim of an incentive was purely to revive the economy in a small area. If, however, a positive effect on aggregate output, be it through more investment or spillovers, is sought, then such studies can be misleading. As not all policy makers may be aware of general equilibrium effects, a requirement for cost-benefit analyses would risk to achieve misleading information, unless their limitations are carefully spelled out.

## B. Principles for Choosing Tax Incentives

**Many of the principles for good general tax policy also apply to tax incentives, including transparency and predictability.** These are important, because investors will need to be able to understand incentive schemes if they are to base their investment decisions on them. Investors will also need to be able to rely on a certain stability of tax incentives granted, before engaging in a major investment. A project requiring repeat investment over the years

would be discouraged by frequent tax changes, even if incentives granted on previous investment were grandfathered.<sup>19</sup> Another argument for transparency is that it reduces the scope for corruption. Incentives should therefore ideally be part of the a country's tax laws.<sup>20</sup> Their inclusion in investment laws is less advisable, because of possible contradictions between different pieces of legislation. Even more problematic are incentives, which are offered as government decrees or in private contracts with firms, because they open the door to arbitrary variation or even corruption.

**A related issue is that tax incentives should be automatic rather than discretionary.** In the hypothetical case of an impartial, incorruptible, predictable and omniscient public service, discretionary incentives would be preferable, as these would ensure that limited resources are focused on investments that would not have taken place otherwise and which entail the highest possible social return. In more realistic settings, however, there are strong reasons for automatic incentives, based on clearly defined criteria, reflecting both the risk of corruption and the difficulty governments have in picking winners.

**As other tax provisions, those for incentives should be robust to tax evasion.** If incentive provisions open new routes for evasion, then their costs could increase enormously. Not only would it be possible to forgo revenue by subsidizing investment that would have taken place anyway, but it could even happen that previously taxed investments reduce their liabilities, for example, if profits are shifted from fully to beneficially taxed investment. If, however, tax evasion is already prevalent before the introduction of tax incentives, then incentives will neither have much of an impact on investment, because hardly any taxes are paid anyway, nor would they cost much in terms of revenue forgone.

**Economic efficiency is a concept of limited applicability when assessing tax incentives.** As tax incentives create a preferential treatment for qualifying investors by their very nature, they will distort the allocation of capital towards the qualifying sectors, unless they are ineffectual. It is, of course, possible that tax incentives remove non-neutral features of the general tax system and thus improve the efficiency of the tax system, at least for qualifying investment. In that case, the size of a country's capital stock may be closer to the one without tax distortions, but the composition of that stock would still be distorted. Nevertheless, efficiency may play a role in assessing tax incentives, as such incentives should at least avoid distortions towards certain types of assets, e.g., towards short-lived ones. Moreover, at a minimum, a temporary tax incentive should be available only to investments which remain viable after the expiration. This would limit the distortion to the market entry stage (or

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<sup>19</sup> See Auerbach and Hines (1988) for a formal treatment of frequently changing tax incentives, and how the expectation of changes can increase effective tax rates.

<sup>20</sup> And their costs, at least to the extent known, should be published as tax expenditure in the budget (OECD, 1996).

possibly address a distortion, such as a monopoly), but would reduce long-term marginal costs below their competitive level.

**Investment tax incentives are not used as policy tools to address equity and their impact is rarely even considered.** For completeness, it is, however, worth considering the effect, which may have to be counteracted through other policies if equity is part of the government's objective function. Most likely, the impact is negative, with the beneficiaries likely to be the wealthiest individuals, often located in foreign countries.

### C. Assessment of Typical Tax Incentives

**Despite their popularity, tax holidays seem particularly harmful.** First, they are particularly attractive to short-term, footloose and rapidly profitable investment, as the benefits accrue only during the limited period of the tax holiday. These are unlikely to match the authorities' priorities. Second, their costs are often intransparent, because beneficiaries are either exempt from filing tax returns, or, if there is an obligation, may not do so correctly. Given that at most limited tax revenue is at stake, the tax administration has no incentive to closely scrutinize such returns. As a result policy makers may not have a good idea about revenues forgone.<sup>21</sup> Third, they may cause rent-seeking behavior, with investors trying to obtain extensions to remain competitive with firms still covered by holidays. In principle, it is possible to think of situations in which a tax holiday could be a useful tool. If, for example, a country is about to begin a major reform towards a more business-friendly environment, then a tax holiday could be used to signal its commitment to the reform, as investors, enticed into the country by the holiday, would leave afterwards, if the planned reforms stall. This appears, however, to be more of a theoretical possibility than a strategy used in practice.<sup>22</sup> Otherwise, one would see tax holidays that would be offered just for a short time (although they could last many years), for example, when a new administration takes over. Instead, tax holidays are typically offered continuously or renewed repeatedly for decades.

**Investment allowances and tax credits have both advantages and disadvantages.** They can easily be implemented in a transparent and automatic way, and they are directly contingent on new investment, i.e., the objective of the incentive. However, the advantage of not reducing taxes on existing investments should not be overstated, as this may need lead to an efficient system in the long run. If initially allowances are increased instead of a tax cut, then future tax cuts will be even harder to justify, because they would benefit owners of

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<sup>21</sup> Instead of specifying a tax holiday in numbers of years, it can instead be specified as a maximum amount of tax to be forgiven within a limited timeframe. In addition to imposing a maximum limit on revenue forgone, this would improve transparency by requiring better bookkeeping and auditing.

<sup>22</sup> Bond and Samuelson (1986) make a similar point, in which a country has asymmetric information about its productivity, and uses tax holidays to signal high productivity to prospective investors. In their model, if investors find that this is correct, they will stay after the expiration of the holiday.



capital who already enjoyed the high allowances (though it would reduce the value of those allowances still outstanding). As the argument would hold every time cash is available for tax cuts, the system would then evolve further towards a problematic one with a narrow base and a high rate.<sup>23</sup> Moreover, investment allowances will distort the choice of capital towards short-lived goods, because any replacement would again benefit from the allowance/credit. More fundamentally, they will encourage investment in physical rather than financial or human capital, although this is arguably not a disadvantage of this incentive, but possibly of the underlying policy, which is to boost physical investment. If they are not refundable—and typically they are not—they will moreover create a distortion between the investment of new and established businesses, as only the latter will have profits against which to set the allowance or credit.

**Accelerated depreciation has similar, though much more limited, implications as investment allowances and tax credits.**<sup>24</sup> Given that accelerated depreciation does not change total deductions, but only brings them forward in time, the maximum benefit to a company is the time value of money. In case of an initially unprofitable investment, there may be no benefit, as deductions will still only be taken in later years.

**Reduced tax rates may have merits, but this depends on the details.** If they apply for a limited time only, then similar concerns as for full tax holidays apply. Otherwise, it is important that the sectors benefiting from the reduced rate can be easily and objectively identified, to ensure transparency and avoid discretion on the part of the authorities. If applied to the more mobile part of the economy, then such a reduced rate could be well justified by economic considerations, even if it led to a permanent split in the tax system. One disadvantage of such a split rate is that there could be repercussions on international tax cooperation, because existing cooperation agreements often proscribe such practice (see below).

**Exemptions from other taxes, particularly those assessed at the border, can be important, but are second-best solutions.** Often such exemptions address more fundamental problems in tax policy or administration that should ideally be fixed directly. Exemptions from VAT on imports, for example, are not necessary if, in cases of excess credits, the tax law provides for VAT to be refunded on all goods including capital goods, and provided the tax administration has a record of timely refunds. Similarly, exemptions from excises on inputs should ideally be dealt with in a more general way, so that all firms using such inputs benefit—in many cases the simplest solution would be the abolition of

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<sup>23</sup> An alternative would to lower tax rates only apply for the returns on new capital, although this would create an administrative mess.

<sup>24</sup> The permission to expense some expenditures that create assets is the extreme case of accelerated depreciation. This is often permitted if intangible assets are created (e.g., R&D expenditure).

excises on many capital goods. Equally, any other small nuisance taxes should be abolished right away rather than wasting resources on both their collection and on monitoring exemptions.

**Special zones can differ so much in their characteristics that it is not possible to make an assessment in general terms.** Some cases, such as special zones for international trading companies, may have no effect other than avoiding hassle, by avoiding charging import duties as goods arrive and refunding them as they are re-exported. Others provide far-reaching benefits including exemption from direct tax, or exemption from indirect tax, even if part of the output is sold nationally. In the latter case, revenue costs can be substantial, especially if profits are shifted to the zones or goods declared as inputs are resold tax free on the domestic market. This is likely to be of particular concern where any establishment can be declared a “zone” and checks are therefore difficult.

**Most financing incentives are likely to have a limited impact, although it depends on the details.** A common incentive is a reduction of withholding tax rates dividends. There are at least three cases where these would not have an impact: (1) when investors are located in countries with residence-based tax systems, (2) when investors are able to avoid dividend withholding taxes (e.g., by providing funding through a tax exempt structure such as a pension fund), and (3) if the marginal source of finance is retained earnings or debt. Similarly, reduced personal income taxes on dividends, would encourage only investment financed by new equity from taxed investors.<sup>25</sup>

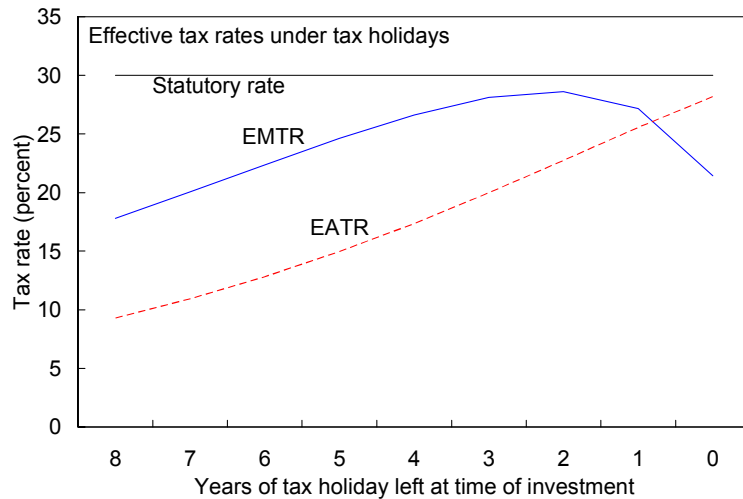
**Effective tax rates allow a quick assessment of the impact on different tax incentives on tax liabilities.** Effective tax rates combine the statutory tax rate with other provisions of the tax system into a single measure, which can be defined either for a marginal investment (i.e., one in which the post-tax rate of return exactly covers the cost of capital) or a rent-earning investment. The former is called an effective marginal tax rate (EMTR) and the latter is an effective average tax rate (EATR). Apart from the tax system, calculated effective tax rates depend on the assumed financing choice (debt or equity), the asset invested in (e.g., machines or buildings), and some macroeconomic variables, such as the interest and inflation rates. The EATR was developed by Devereux and Griffith (2003) and encompasses the previously developed EMTR (King and Fullerton, 1984) as a special case. It was extended in Klemm (2008) to allow the incorporation of tax holidays.

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<sup>25</sup> At least under the ‘new view’ of dividend policy, see, among others, Bradford (1981).

**The diminishing effect of tax holidays on investment can be illustrated by effective tax rates.** This is shown for a hypothetical country with a statutory tax rate of 30 percent and a tax holiday of 8 years.<sup>26</sup> This

example shows how the EMTR, the rate that is relevant for very profitable investment, is reduced to about a third for any investment taking place at the beginning of the tax holiday. Any additional investment over the years will face increasingly high tax rates, so that this scheme is particularly attractive for front-loaded, rapidly profitable investment. For investment that just breaks



even, the EMTR is the relevant measure. It shows that for such investment the benefit of a tax holiday is much more limited. During some of the years of the holiday, the rate on additional investment can even be higher than after the expiration. This occurs because, depending on the generosity of the depreciation scheme and assumptions about discount rates, the loss of the depreciation allowance can outweigh the benefit of a zero tax rate (Mintz, 1990).<sup>27</sup>

**Generous depreciation schemes or capital allowances/tax credits are the most valuable incentives for investment projects of low profitability.** The left panel of Figure 1 compares the EMTR for three stylized tax incentives: an eight-year tax holiday, a permanently reduced tax rate (to 15 percent), and a system of full depreciation in the year of acquisition (cash-flow tax). The cash-flow tax reduces the EMTR to nil, in line with the result that such taxes are neutral to investment. An investment allowance or tax credit could even lead to a negative EMTR.<sup>28</sup> An accelerated depreciation scheme with less than full deduction in the year of acquisition would also reduce the EMTR, but not to zero. A reduced tax rate would also benefit marginal investment projects, but to a lesser extent, because normal profits would continue to be subject to taxation. Finally, a tax holiday, is of comparatively little use. While there is no tax liability during the holidays, the depreciation allowances, which would have exceeded pre-tax returns in the early years, are lost.

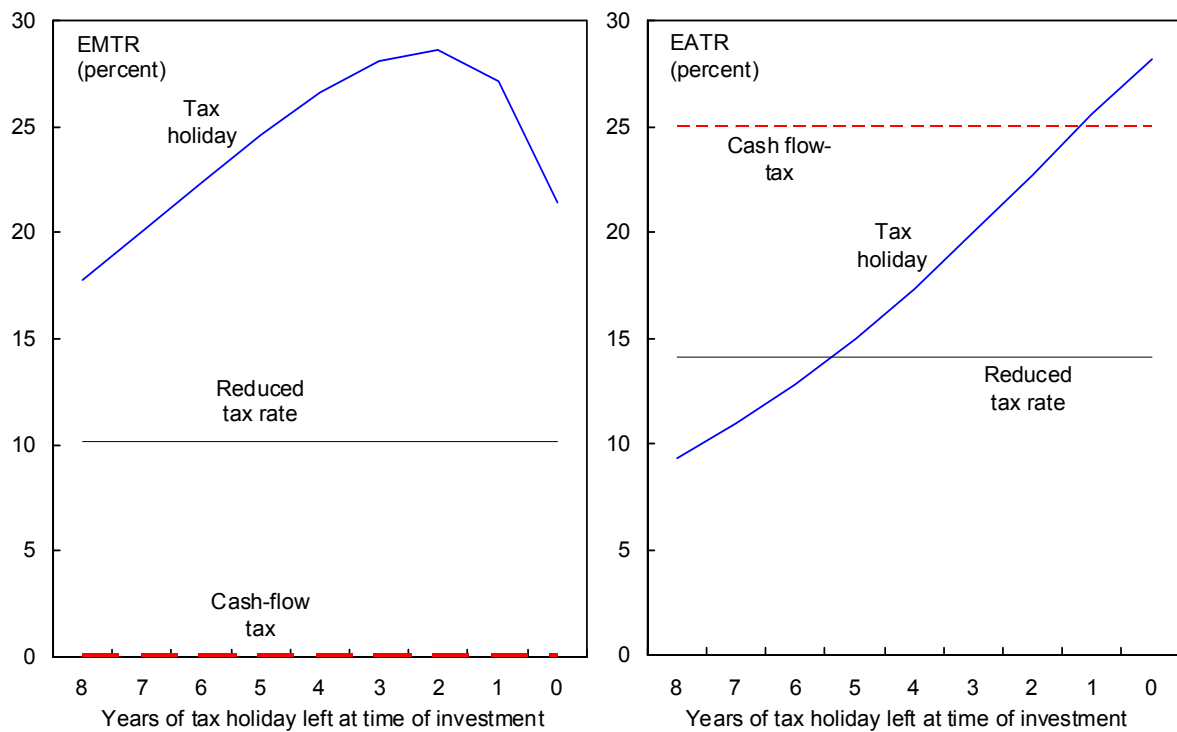
<sup>26</sup> This assumes that taxes are paid after the eight-year holiday. In those countries where firms manage to negotiate repeated extensions, the EATR would be flat at zero.

<sup>27</sup> If firms are permitted to take depreciation allowances after the holidays period, then there is no such effect, and effective tax rates are even lower.

<sup>28</sup> This is based on the assumption that the firm has other taxable profits or that unused deductions are refundable. If they can only be carried forward, tax rates will be higher, because of the time value of money.

**Profitable investment, however, benefits most from tax holidays and reduced tax rates.** The right panel of Figure 1 compares the EATR for the same stylized tax incentives. The higher the profit, the less relevant are depreciation allowances, which are a function of the asset, not of the profit level. Hence generous depreciation schemes, even the particularly generous cash-flow tax are of little use to such rent-earning investments. Tax holidays, however, yield enormous benefits, because the huge profits achieved remain untaxed for the duration of the holiday. As the tax holidays expire, the EATR on additional investment rises quickly, limiting the benefit for projects requiring repeat investments. These would be particularly worthwhile under a permanently reduced tax rate.

Figure 1. Effective tax rates under different incentives



Source: Staff calculations, based on methodology in Klemm (2008). Assumptions: asset: plant and machinery; source of finance: equity; inflation: 3 percent; real rate of interest: 5 percent; economic depreciation: 12.25 percent; depreciation allowance: 25 percent, declining balance; net profit rate (EATR): 30 percent; personal taxes excluded.

**The reason why few countries have replaced tax holidays by accelerated depreciation of capital allowances/tax credits may be the significantly greater benefits of the former to profitable investment.** Indeed, if countries attempt to attract particularly the highly profitable investment of multinationals, then such a reform would lead to a much less competitive tax system. If such countries also face revenue constraints and therefore wish to maintain a high tax rate on immobile investment, and if a split rate is ruled out, because of

political reasons, then a tax holiday would be a rational policy. Still, the risks of that policy remain, in particular, the possibility that mainly footloose investment is attracted.<sup>29</sup> In that case no further investment will take place after the expiry of the holiday, unless new holidays are available (either to the same firm or a different one), so that the country is trapped in this strategy. So ultimately the country is running a split-rate system with a rate of zero on some investment, combined with high administrative and legal costs, as mobile firms have to ensure that they continue qualifying for tax holidays, including by shutting down operations and reopening. It is possible that an explicit split-rate system with a low but positive rate would be equally attractive to mobile capital, because of the lower compliance costs. Moreover, it is more likely that long-term investment is attracted.

**Political constraints may justify an incentive that is not the optimal from an economic point of view.** It is, for example, possible that different institutions within a country are relatively independent and have different views or aims. Take, as an example, a country with low investment rate as a result of an inefficient or corrupt tax administration. The optimal solution would clearly be a reform of tax administration. However, if this is not politically possible, then it is not clear that the country is better off doing nothing rather than introducing a special economic zone with a separate tax code or a tax holiday (including exemption from administrative requirements). In that case the disadvantages of that approach (e.g., profit shifting) need to be weighed against the costs of discouraging investment in the entire country.<sup>30</sup>

#### D. The Scope for Coordination

**If the perspective shifts from one country's to the global or regional level, the availability and desirability of the policy options change.** Any tax incentive that does not create new investment at the regional level, but only shifts it from one jurisdiction to another would then appear as a needless loss of revenue.

**The desirability of regional cooperation rests on the assumption that capital income should be taxed.** This is, however, a much debated issue among economists, with proponents of expenditure tax systems arguing against such taxation on the grounds that it affects intertemporal saving and consumption decisions by discouraging saving. If that view is adopted, then tax competition, including with the use of tax incentives, which erode the tax base, may be a good thing, because it increases the chances that corporate income taxation is abolished.

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<sup>29</sup> There may be occasions where attracting footloose investment is acceptable. E.g., after a major catastrophe or war, the main aim may be to create investment and employment quickly. Temporary location of footloose investment may fulfill a useful purpose by creating work and thus speeding up the recovery process.

<sup>30</sup> And tax erosion through profit shifting could build the pressure for fundamental tax reform. This is not without risks though, as the special zones could be difficult to dismantle, even following fundamental reform.

**Theoretical reasoning suggests that regional coordination is difficult, although difficulties may be overcome as shown by some recent initiatives.** The main difficulty of coordination is that some countries have more to gain than others, with small countries whose current tax system is very generous standing to lose most. Moreover, the more countries in a region cooperate, the more attractive it becomes to be an outsider and maintain lower taxes. This may be overcome, if the coordination is sponsored by a pre-existing regional institution, membership of which entails benefits other than tax coordination. Thus the countries of the European Union have adopted a Code of Conduct on Business Taxation, which prohibits certain tax competition activities, which are considered harmful, i.e., tax rules which provide preferential treatment to a subset of firms. Moreover, State Aid Rules are also applicable and limit the scope for incentives that resemble targeted subsidies. More recently, there has also been an initiative in selected Central American countries, which as a first step has led to information sharing on available incentives. If cooperation is attempted, it is best to start as early as possible, because once tax competition is in full swing, its beneficiaries will be less willing to participate.

**Regional coordination may make tax competition more harmful, depending on how coordination takes place.** The setting of a minimum tax rate could have a limited impact, if tax bases are not harmonized (Klemm, 2004).<sup>31</sup> A prohibition of special regimes for foreign investors, such as reduced tax rates, could lead to lower tax rates overall and thus exacerbate the revenue losses from competition (Keen, 2002). A good example of this is Ireland, which replaced a split rate system with a 10 percent rate on manufacturing and a 28 percent rate on other activity by a single rate of just 12.5 percent. Still, this is a typical feature of coordination. The EU Code of Conduct, for example, rules out special schemes for specific sectors.<sup>32</sup> An OECD initiative is more narrowly focused on ensuring information exchange to limit international tax evasion.<sup>33</sup>

**Regional coordination may be successful in cases where region-specific rents can be earned.** Such rents could include duty-free access to a regional market or common regional scenery. Because these rents are linked to the location in the region, they can be taxed without jeopardizing investment in the region. Regional coordination will not help in taxing company specific rents, such as know-how, because competition from other region will remain, unless all regions coordinate (with each other or independently in a similar way).

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<sup>31</sup> This would, however, have the effect of lower (possibly negative) EMTRs and higher EATR, thus yielding systems that are more attractive to marginal (or even unprofitable pre-tax) investments.

<sup>32</sup> In practice, this is not consistently applied, as special shipping schemes were ruled acceptable on the grounds that they are subject to international (as opposed to purely European) competition.

<sup>33</sup> This initiative was initially more ambitious and had similar aims as the EU Code of Conduct.

#### IV. EMPIRICAL EVIDENCE

This section provides a brief overview of the empirical literature. While the literature specifically addressing the question of how important are tax incentives in explaining investment is rather small, there are a number of related literatures that are relevant. First, there is a more general literature on the sensitivity of FDI to taxation. Clearly, the finding in this literature of a significant effect, suggests that incentives may also be important. Second, there is a literature looking specifically at R&D expenditure and its responsiveness to R&D incentives. Again, the finding of a significant effect in this literature supports the hypothesis that other tax incentives may also affect investment in areas they target. Finally, there is a small literature examining the effects of tax incentives and economic zones, although data problems limit the reliability of its results, especially in developing countries.

**The more general literature, addressing the question of whether taxes affect foreign direct investment, has found a significant effect, but uncertainty about its size remains.**

Hines (1999) provides a survey of the literature and concludes that there is little doubt that taxes affect the volume and location of FDI (as well as tax avoidance).<sup>34</sup> De Mooij and Edervén (2003) perform a meta analysis of published results on this relationship and find a median semi-elasticity of FDI to the tax rate of -3.3 (implying that a 1 percentage point increase in the tax rate reduced FDI by 3.3 percent). They also report an enormous variation across studies, the standard deviation of semi-elasticities being 9.0. The majority of elasticities are, however, within a range of -5 to 0, and over 80 percent have a negative sign.

**A growing literature has explored the specific effect of R&D tax credits and found that they had a significant effect.** R&D tax credits are ideal for empirical analysis, because they apply to a very specific activity, were introduced in a number of industrialized countries and data are available. While much of the research uses data for one country only, Bloom and others (2002) use a panel of nine OECD countries, which allows them to control for country effects. They find that a \$1 tax expenditure leads to \$1 increase in R&D in the long-run, with a much smaller short-run impact. This and other studies, however, do not attempt to include costs other than revenue given up (such as administrative costs) or to take account of possible relabeling of existing investment or crowding out of other investment. It is hence far from clear, whether these incentives are worth their cost. Moreover, a one-to-one relationship between tax expenditure and investment suggests that the government could equally have just spent the money directly on R&D. In order to justify using the funds instead on tax incentives, one would need to show that the private sector is superior in identifying relevant R&D or in undertaking the research. This is possible, as they are more likely to be driven by market demands, but it is far from certain, because private business will retain a preference to engage in R&D leading to results with relatively limited spillovers, despite receiving tax incentives.

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<sup>34</sup> Another, more technical, survey is provided in chapter 4 of OECD (2001) and comes to a similar conclusion.

**Empirical work on the impact of economic zones in the US suggests that their impact is limited.** While most early research focused on single programs so that its results do not necessarily generalize, more recently there have been panel data studies comparing economic zones with neighboring regions, and finding very small beneficial effects on employment and investment.<sup>35</sup> None of the studies attempts to estimate aggregate impacts, possibly because these are not the objective of U.S. economic zones, which are often aimed at revitalizing backward areas.

**There is very little work specifically addressing tax incentives for general investment, particularly in developing countries.** The little work available typically employs a descriptive or case-study approach, rather than econometric analysis, which is probably explained by the difficulty of obtaining sufficiently reliable and broad data sets. Bond (1981) finds that tax holidays lead to short-lived and small firms in Puerto Rico. Shah (1995) contains papers looking at the effect of tax incentives in a variety of countries,<sup>36</sup> using different methodologies including calculations of METRs and business surveys. The overall conclusion from them is that tax incentives are often ineffectual, either because the particular incentives offered are not very valuable to firms or because important pre-conditions are not met, such as a relatively stable macroeconomic environment and satisfactory public infrastructure. These studies tend also to conclude that investment incentives are more effective than tax holidays. These results are, however, not fully reliable. A main weakness is that most studies focus on one country only, making it difficult to control for factors other than tax incentives. Moreover, most studies present just estimates of the effect of incentives on the cost of capital or the METR, but not on the ultimate goal of the policy, i.e., typically investment.

**New econometric evidence suggests that tax incentives may have boosted FDI, but with no effect on total investment.** Klemm and van Parys (forthcoming) use a panel of African, Caribbean and Latin American countries to test for tax competition in tax incentives and to explore the effects of tax incentives on FDI and total investment. They find that countries react to other countries' tax incentives, just as they do to their tax rates. They also find that FDI increases if tax incentives, particularly tax holidays, are offered, although this is partially counteracted by the negative effect of the resulting higher corporate tax rate. There is, however, no robust effect on total gross fixed capital formation or economic growth, suggesting that FDI crowds out other investment or that especially the part of FDI that covers change of ownership rather than new investment is attracted.

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<sup>35</sup> See Bondonio and Greenbaum (2007) for a brief overview of the empirical literature and a further panel study. According to their study, economic zones appear to be able to attract new investment and create employment, but this is counteracted by simultaneous business closures, with older and other non-qualifying firms unable to compete.

<sup>36</sup> See also Wells and Allen (2001) for a study of Indonesia, which is particularly interesting, because Indonesia repeatedly introduced and abolished tax holidays, with apparently little effect on FDI.



## V. CONCLUSION

**In many cases, previous skepticism about tax incentives seems warranted, and advice against their rampant use appears appropriate.** An argument can be made that tax incentives are a rational and beneficial response to the pressures of tax competition, because they permit, in principle, the combination of a competitive tax system for mobile activities with higher taxes elsewhere. In practice, however, it may be difficult to achieve such an outcome, because of the many disadvantages of existing tax incentives and difficulties in their administration.

**Given the difficulty in assessing both the costs and benefits of tax incentives, opinions about their desirability may differ.** It is important—though admittedly difficult—to ensure that any cost-benefit analysis go beyond the obvious costs in terms of revenue loss and administrative costs, unless it is to be very misleading.

**Advice on the specific types of incentives may need to be reconsidered.** Previous work has generally considered investment incentives at the margin only, rather than discrete rent-earning investment decisions, as often taken by multinationals. This has led to the recommendation of accelerated depreciation instead of tax holidays. If, however, the aim is to attract investors who expect to earn economic rents, such as multinationals owning patents or special knowledge, then accelerated depreciation seems an inappropriate choice and a permanently reduced tax rate may be more promising. If, however, a country can only offer the possibility of a rent, e.g., if natural resources are suspected, but their amount and extraction costs are unknown, then accelerated depreciation may have its merits, because it would reduce risks in the case of higher capital costs. Identifying the optimal incentive is thus complicated as it depends on the exact nature of the industry and of the international competition. The advice to avoid tax holidays, however, remains generally valid, as they are particularly attractive to short-lived one-off investment.

Bringing together the insights from both the broad principles and the detailed analysis of tax incentives, Table 1 provides a summary of cases where tax incentives may be more or less warranted and which incentive would appear the most efficient. This table should be applied with caution though: it is not meant to suggest that tax incentives are recommended if the relevant conditions are met. But, provided a country already employs tax incentives and wishes to continue doing so, then the table can help identify those incentives, which are likely to be the most efficient. Equally, if a country wishes to gradually reduce tax incentives, the table may help in identifying the obvious first candidates for removal.

**Even if a tax incentive can be useful in principle, a country may be well advised to refrain from introducing one.** This reflects the advantage of a coherent and simple tax system, which cannot take account of all issues, especially since they may be changing over time. Moreover, once a system has created the precedence of an exemption for one particular sector or region, the pressure for further ones will increase. The ultimate outcome may be a

less efficient tax system, even if a few of the incentives used have a sound economic rationale and are cost-effective.

Table1. Possible Justifications for Tax Incentives

Case for tax incentives	Characteristic	Best choice of incentive
I Strong	a. Internationally particularly mobile activity	If perfectly competitive industry: investment allowances; if firm-specific rents: permanently reduced tax rate
	b. Positive externalities	Ideally subsidy/tax credit based on activity (e.g., R&D). Otherwise as la.
II. Ambiguous	a. Regional rents	Regional tax coordination. Failing that: la.
	b. Unattractive location	Address weakness directly (improve governance, infrastructure...). Failing that: la
	c. Tax cut could spark reactions in other jurisdictions	May be best to wait. However, if eventual tax cuts inevitable, possible benefit from being first mover.
III. Weak	a. Location-specific rents	Instead of incentive, additional neutral rent tax could be charged.
	b. None of the above	Instead cut overall tax rate or remove other overall disincentive to invest.

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