

Towards a framework for managing tax incentives in the context of Ethiopia

Prepared by

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1. Background and context

This paper aims at providing a framework for approaching the efficient provision and management of investment tax incentives. It draws upon tax and investment policy theory and practice along with other prior studies of this issue. The issue of the taxation of investment has been a dynamic and controversial one as many countries have reduced corporate tax rates and also offered various combinations of investment tax incentives over recent decades. This has generated tax competition between countries and jurisdictions in their attempts to attract investment and create jobs. This competition is often referred to as “a race to the bottom” with potentially self-defeating and destructive features, particularly where the incentive is cost ineffective in terms of revenue which then constrains the ability of the public sector to deliver services that would otherwise support business investment and operations. Two approaches are taken to analyzing and managing this issue. They typically involve (i) an accounting of the costs of incentives as a component of tax expenditure accounts and (ii) studies and related reforms to rationalize the tax incentives. In addition, where feasible, hidden and unaccounted for tax incentives can also be replaced by direct discretionary incentive expenditures where this is administratively feasible or necessary. Once tax expenditure accounts are institutionalized then the evaluation of existing and new investment incentives can become a routine component of expenditure evaluation and public budgeting.

The approach in this paper will be more on developing the logic of the structure of a framework for managing tax incentives rather than a comparison of country practices. While the range of country practice and experience is useful, it should be judged against a logical framework and adapted to fit the circumstances of any particular country.

Tax competition for investment has evolved in the context of a range of globalization phenomena, importantly the integration of capital markets and the ongoing growth in international trade and the related expansion of multinational corporations². Capital market growth can be seen from the stock market capitalization as a share of GDP growing from under 20% of world GDP to over 30% by 2005 following the capital and foreign exchange market liberalizations of the 1970s and 1980s. This growth in capital markets has occurred in most types of country but has not reached the same degree in most low income countries in particular. Stock market capital has reached over 100% of GDP in the US, UK and South Africa, for example, but is typically more in the range of 40% to 60% in emerging markets and around 20% in low-income developing countries. This phenomenon has led to the capital markets of high-income countries of North America, Europe and Asia becoming highly integrated with investment portfolios of both individuals and financial institutions being widely held across these regions. This results in highly mobile capital flows between these countries which mostly have low or very low country risk ratings. This leads to capital investments being highly responsive to small changes in rates of return between these countries which form more than 75% of the world economy.³ This has had significant supply side effects on the policy for the taxation of savings and investment income as

² See World Bank, World Bank Development Indicators and Global Financial Development indicators

³ For example, using the Institutional Investor Country Credit Ratings for countries for low risk (70-85) and very low risk (85-100) includes most OECD countries plus some additional Asian economies (China, Hong Kong, Malaysia, Singapore, Taiwan) and some Gulf States (Kuwait, Qatar, Saudi Arabia and United Arab Emirates) and covers over 75% of world GDP.

discussed in section 2. While the country risk ratings of most emerging middle-income countries tend to be improving into the moderate risk range, for most developing economies in the low and lower middle income ranges tend to be in the high and very high country risk range. This has implications for the significant risk premiums in costs of equity capital finance and even sovereign debt for these countries which are typically not integrated into the world capital market.⁴ For example, within Africa, Botswana and South Africa are on the border line of moderate risk countries, all other are high or very high risk. This has isolated their tax systems from some of the more severe pressures on the taxation of investment arising within the more open and fluid well integrated capital markets.

The other major globalization phenomenon that has been ongoing for many decades is the growing in international trade of goods and services. World trade in goods and services has grown from around 25% of world GDP in the 1960s to over 50% since 2005. This increase in trade shares has occurred in all regions. Excluding the resource-rich countries, the highest trade shares in the past decade are found in the developing economies with the East Asian and Pacific economies showing trade surpluses, whereas most other low income developing economies have high trade shares, but trade deficits. The lowest trade shares in the past decade are in the Americas and South Asia. This worldwide growth in trade has been spurred by ongoing reductions in trade barriers (trade taxes and quantitative restrictions), more efficient transportation and trade facilitation through ports and more efficient trade finance. Importantly, the growth in use of the World Wide Web has also spurred trade in the service sector allowing outsourcing of call centers and back-office operations in many sectors.

This expansion in trade has been accompanied by a growing role of the multinational or transnational corporations (MNCs and TNCs). While large companies have long dominated business in domestic markets, MNCs now often do more business outside of their home countries than inside. They are constantly making choices about where to locate business activity in their global value added chains. Hence, especially for business activity that is potentially locationally mobile, the issue of the relative attractiveness of locating in a specific region or country becomes key in attracting some types of investment. Mobile business activities typically require (i) low transportation costs of inputs and/or products relative to their unit values and (ii) possibly also low-cost of moving their production capital. The “footloose” activities such as clothing and footwear and internet-based services tend to have both characteristics, whereas manufacture of electronic components, for example, typically only has the first characteristic which means it is less mobile once it is established in a particular location. Attractiveness of a location depends in part on the expected taxes, but more importantly on the whole range factors that are typically captured in indicators of the investment climate, competitiveness and/or country risk ratings of a location. These investment demand side characteristics are discussed in section 3 that determine the responsiveness of different investment sectors to incentives.

In section 3 the issue of the different characteristics of the different characteristics of different investment sectors will be introduced: private tradeable versus non-tradeable sectors, location specific

⁴ Well tested relationships between country risk ratings and the required rates of return on equity and bond investments have been estimated. Erb, Claude, Campbell R. Harvey, and Tadas E. Viskanta, “Country Risk and Global Equity Selection.” *The Journal of Portfolio Management* 21 (2), 1995, pp74–83; ———, “Expected Returns and Volatility in 135 Countries.” *The Journal of Portfolio Management* 22 (3), 1996, pp 46–58; Harvey, Campbell R., “Drivers of Expected Returns in International Markets,” *Emerging Markets Quarterly* (Fall) 2000, pp 1–17; Chapter 6 in Roger J. Grabowski, James P. Harrington, Duff & Phelps, Carla Nunes, *2016 International Valuation Handbook: Guide to Cost of Capital*, Wiley, June 2016

versus mobile sectors, and private versus public sector-determined investments. These considerations are key to deciding the appropriateness of investment incentives and the choice of modality of delivery – through the tax expenditures or through direct public expenditures or policies. This leads into section 4 that covers the broad modalities of investment incentives as well as the issues related to different types of investment tax incentives.

Section 5 draws out some key lessons in a framework for the design and delivery of investment incentives for a developing country such as Ethiopia based on the findings and then section 6 outlines how tax expenditure accounting and budget practices could be used to improve the management of tax investment incentives in the broader framework of managing public and private investment.

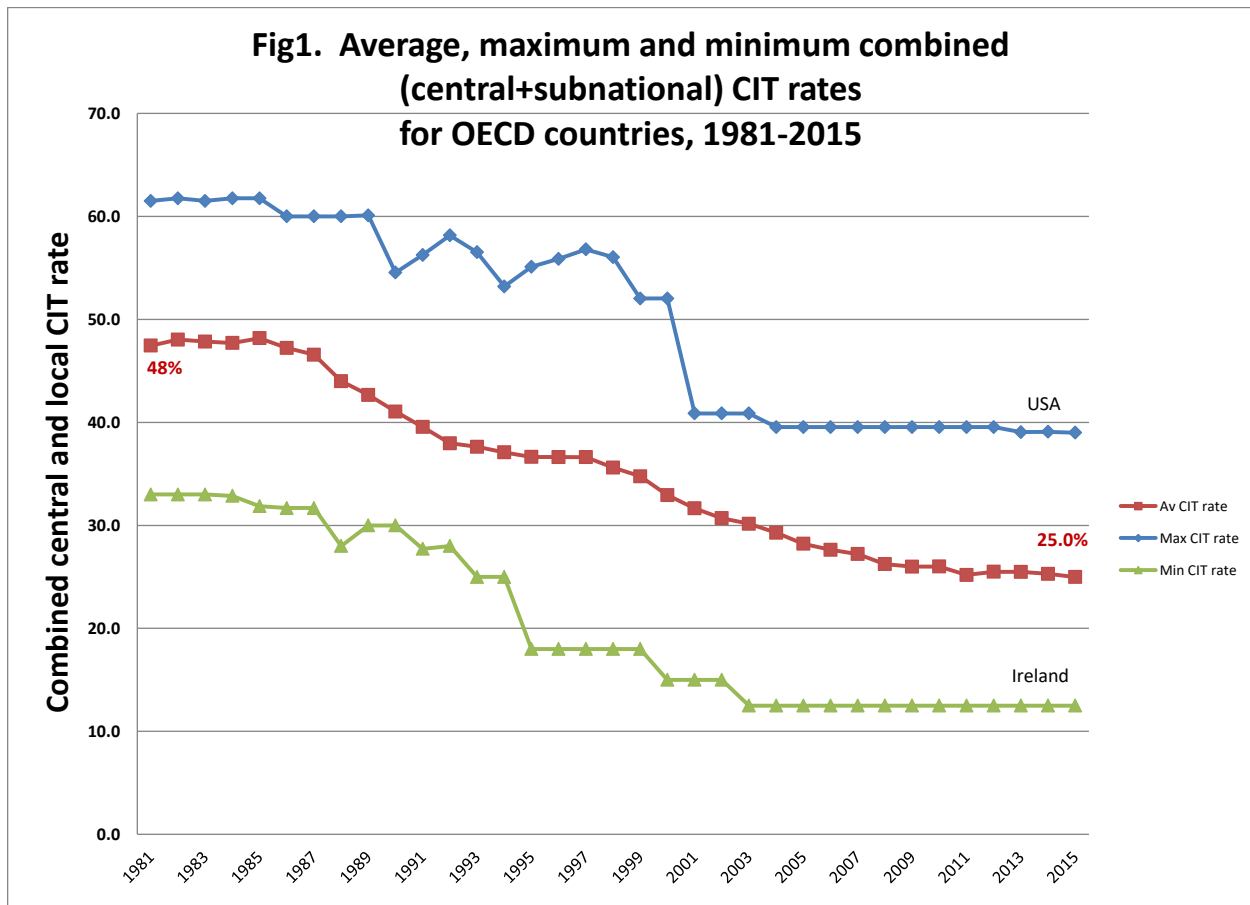
2. Supply-side of capital and its effects on the taxation of capital income

In a closed economy, such as taking the world economy as a whole or a very large economy, the domestic supply of labor and savings are typically found to be relatively price inelastic such that when they are taxed at equal rates they bear similar shares of the tax burden and capital income can be taxed efficiently at moderately high rates. By contrast, when considering one economy within a group of countries within a well-integrated capital market such that each country is relatively small, then the countries effectively become price takers of the rate of return on capital (adjusted for inflation and risk differences between countries) required by highly price-responsive foreign savers. Under small country, open economy conditions, efficient taxation of income argues for taxing the more mobile capital income at a lower rate than labor income.⁵ Such dual or Nordic taxation systems (given their early adoption by Nordic countries) have emerged in most advanced economies. This phenomenon can be illustrated by pattern of the average tax rates of the 34 OECD countries in recent decades. Figure 1 shows the average corporate income tax (CIT) rate falling from 48% in the early 1980s to 25% by 2010 where it has remained steady through 2015. It also shows that larger countries such as the US (followed by Japan) tend to have higher CIT rates, but smaller ones such as Ireland have lower CIT rates. At the same time, while CIT rates have fallen, a gap has opened up between the top personal income tax (PIT) rate and the CIT rate. On average in 2015, the top PIT rate was 40% and 27 out of the 34 countries had higher CIT than PIT rates. Similar dual taxes have been implemented by some non-OECD countries such as China, Columbia, South Africa and recently Uganda. These “dual” tax systems with lower CIT rates have evolved in response to both the relatively high mobility of financial capital among these countries as well as the tax competition that arises as a result of countries following the countries that have taken the lead in lowering their CIT rates⁶.

⁵ For more technical discussion of the analysis of the CIT for small open economies, see the various articles by A.C Harberger as cited in Harberger, A. C. (2008). The incidence of the corporation income tax re-visited. *National Tax Journal*, LXI (2), 303-312 and Harberger, A. C. (2008). Corporation tax incidence: reflections on what is known, unknown and unknowable. Chapter 6 in Diamond, J. and G. Zodrow (eds.) *Fundamental Tax Reform: Issues, Choices and Implications*, Cambridge: MIT Press.

⁶ Note that most of these dual taxation systems are impure. Not all capital income is taxed at the same lower rate. Aside from the tax preferences for financial savings in many pension funds and tax breaks for low levels of financial savings, the main target of lowering the tax rate on capital income has been the CIT rate to affect corporate investment decisions. Ultimately, the tax burden on capital owners will also be determined with the tax treatment of the profit distributions possibly eventually flowing back through a parent company in another country and eventually received at the personal level with or without some level of tax integration. At the same time, investment income earned through non-corporate business entities have remained taxed under the increasing marginal PIT rate structure. To some extent the tax gap is closed when profit distribution are subject to

Generally, whether countries have moved to dual taxation systems or retained the CIT rate at the PIT rate, CIT rates have declined over recent decades. A study of the CIT rates for 173 countries over 2003-15 shows that the simple average CIT rate declined from 30% to 22.9%, but the 2015 GDP-weighted average CIT rate was 29.8%. The largest tax average tax rate reductions occurred in Asia and Europe (and North America, if the US is excluded), but the lowest in Africa and South America. In addition the highest average CIT tax rates are in Africa and South America at about 28%. This outcome is consistent with the discussion above about lower the level of integration of these regions with the world trade and capital markets.



By contrast with the low risk countries with their well-integrated capital market, which form about three-quarters of the world economy, the majority of countries have low country credit rating scores. Taking Institutional Investor Country Credit Ratings (IICCR) for 2014/15, for example, some 107 out of 179 countries have credit rating below 50 out of 100 which means “very high risk.” This typically means that the real costs of long-term government commercial debt are in the range of 6% to 10%, and real required rates of return on equity investment are in the range of 15% to 30%. The capital markets

withholding or secondary taxes or are subject to added tax at the personal level. Effectively the system becomes a tradeoff between attracting foreign corporate investment and taxing the realized investment income of high income individuals at close to the top PIT rate.

of these countries are weakly integrated with world capital markets and the supply of foreign savings is upward sloping and has very low responsiveness to changes in domestic rates of return. This means that these countries have not been under the same capital market pressures as the high-income countries that operate in a low-risk and well integrated capital market to lower their CIT rates to attract or retain corporate investment capital. Most countries in Sub-Saharan Africa have country credit ratings below 50. Countries such as Angola, Ghana, Kenya, Mozambique, Senegal, Uganda, and Zambia have IICRs in the range of 30 to 40, while Ethiopia has a score around 20. This indicates a capital market where little or no portfolio capital flows are occurring and domestic investors (including the public entities) will have limited access to foreign capital outside of the international and regional development banks. In addition, it is expected in more closed and less competitive economies, large domestic business are likely to have some market power to raise local prices, a hence justify higher CIT rates to tax back some of the monopoly profit margins.

At the same time, while open market capital inflows may be low, generally foreign direct investment (FDI) may remain a significant source of investment (2 to 5% of GDP, say) even in high risk countries given direct investors can often negotiate around many features of the risks in a country to access some feature that generates value for the company such as access to a natural resources, an agreement to build and operate a public utility, access to a scarce raw material or a large local market. See Table 1. Interestingly, FDI inflows generally are wide spread across a wide range of countries in different income groups and regions. Outside of some outliers like Luxembourg and Singapore that have high levels of FDI inflows and outflows, it is more remarkable that FDI patterns across country types fall in a relatively narrow range (but often with some year-to-year volatility) and except for the low-income group which shows low levels of net outflows, most countries also generate FDI outflows. The net FDI flows are therefore smaller accordingly. Overall, the high income countries have been generating net FDI outflows over the last 15 years, while on average developing and emerging economies, especially low-income countries have been net recipients of FDI.

At this stage of the analysis, while FDI is typically seen as generating the potential for positive externalities such as access to innovative technology, management skills or new markets, it is important to note that it typically forms a limited share of the total investment in a country and can be quite volatile in a country from year to year. For example, in Ethiopia if net inflows are 3% of GDP out of a total capital formation of 30% of GDP, this is only 10% of the total investment and not enough to justify a broad based cut in the CIT rate to attract FDI.

At the same time, it is noted from Table 1, that over 2000-08, Ethiopia maintained FDI inflows averaging 2.9% of GDP (similar to other developing countries), but this dropped to 1.3% over 2009-14. This would raise some concerns, but these no doubt relate to the demand-side investment conditions across different investment sectors in Ethiopia rather than the supply side. The range of issues affecting the attractiveness of investments from the demand-side is dealt with in the next section.

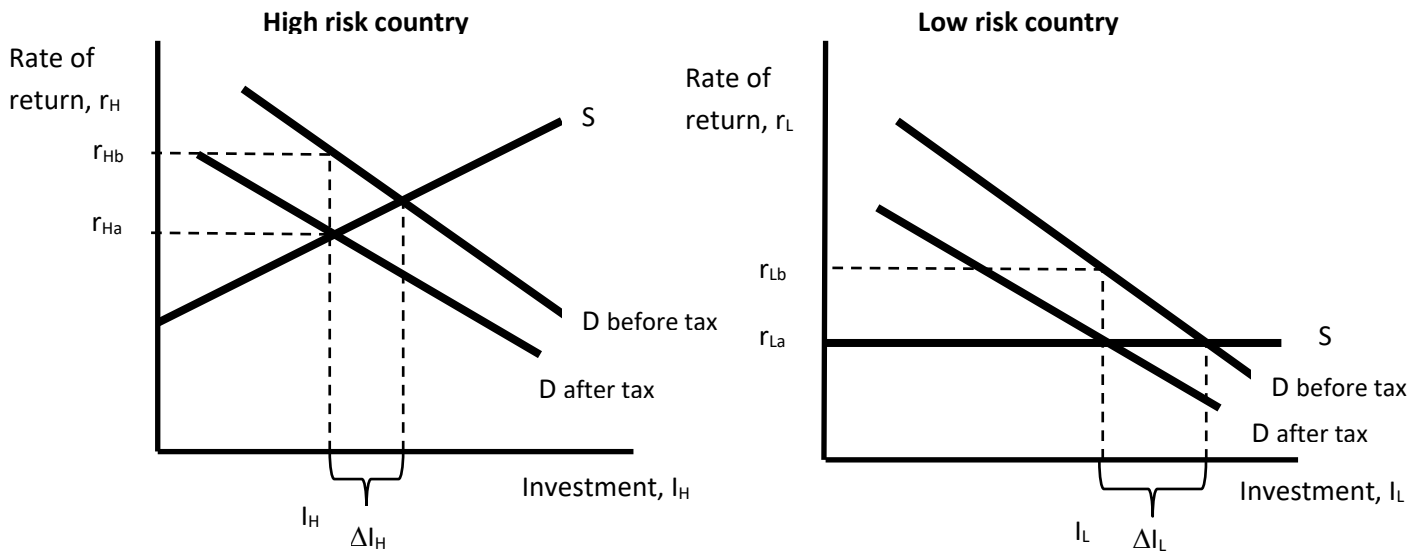
Aggregate of countries or individual country	2000-08					2009-14						
	FDI net inflows		FDI net outflows		Net FDI	FDI net inflows		FDI net outflows		Net FDI		
	Mean	Std Dev	Mean	Std Dev	Mean	Mean	Std Dev	Mean	Std Dev	Mean		
Income group	% GDP					% GDP						
High income OECD	3.0	1.5	4.2	1.6	-1.2	2.1	0.5	3.4	0.7	-1.3		
High income non-OECD	4.6	1.7	3.7	1.4	0.9	4.7	0.4	4.2	0.9	0.5		
Upper middle income	3.4	0.5	0.7	0.3	2.7	2.9	0.3	1.0	0.2	1.9		
Lower middle income	1.9	1.1	0.4	0.4	1.5	2.2	0.2	0.6	0.1	1.6		
Low income	3.0	0.7	na		3.0	4.4	0.9	na		4.4		
Least Developed	3.0	0.7	0.5	0.2	2.5	2.8	0.4	0.4	0.4	2.4		
Fragile & Conflict Affected	3.1	1.2	0.9	0.5	2.2	2.6	0.4	0.4	0.2	2.2		
Regional group												
SSA	2.9	0.9	0.2	0.7	2.7	2.6	0.6	1.7	1.6	1.0		
MENA	2.7	1.7	1.4	1.2	1.3	2.3	0.9	0.9	0.3	1.3		
LAC	3.1	0.4	0.7	0.5	2.4	3.0	0.5	0.9	0.2	2.1		
EAP (ex HIC)	3.3	0.7	0.7	0.3	2.6	3.1	0.5	1.0	0.1	2.1		
SA	1.4	0.9	0.5	0.5	0.9	1.6	0.4	0.5	0.3	1.1		
Organisational group												
OECD	2.9	1.4	4.0	1.6	-1.1	2.1	0.5	3.3	0.7	-1.2		
BRICS												
Brazil	UMIC	LAC	2.9	1.1	0.9	0.9	2.1	2.9	0.7	0.6	0.5	2.3
China	UMIC	EAP	3.7	0.7	0.6	0.3	3.1	3.2	0.6	0.8	0.1	2.4
Indonesia	LMIC	EAP	0.4	1.8	1.1	0.2	-0.7	2.2	0.7	0.9	0.3	1.3
India	LMIC	SA	1.4	1.0	0.6	0.6	0.8	1.8	0.5	0.6	0.4	1.1
Russian Federation	HIC non-OECD	ECA	2.4	1.4	2.2	1.0	0.2	2.6	0.7	3.4	0.6	-0.7
South Africa	UMIC	SSA	1.9	1.9	0.1	1.4	1.8	1.6	0.7	0.8	0.9	0.8
Selected countries												
United Kingdom	HIC OECD	ECA	5.7	3.5	8.7	4.9	-3.0	1.5	0.7	-0.1	2.4	1.6
United States	HIC OECD	NA	1.7	0.9	2.0	0.9	-0.4	1.4	0.4	2.4	0.3	-1.0
Korea	HIC OECD	EAP	1.0	0.4	1.1	0.5	-0.1	0.9	0.1	2.3	0.3	-1.4
Mexico	UMIC OECD	LAC	3.0	0.6	0.4	0.3	2.5	2.3	0.7	1.2	0.4	1.1
Vietnam	LMIC	EAP	4.8	2.5	0.2	0.1	4.6	5.8	0.9	0.8	0.2	5.1
Thailand	UMIC	EAP	3.4	0.7	0.3	0.3	3.1	2.5	1.5	2.3	0.9	0.2
Philippines	LMIC	EAP	1.4	0.9	0.8	1.2	0.6	1.2	0.6	1.5	0.5	-0.3
Cambodia	LIC	EAP	5.1	2.7	0.0	0.3	5.1	7.8	2.3	0.2	0.0	7.6
Malaysia	UMIC	EAP	3.2	1.3	3.0	2.2	0.2	3.1	1.7	5.0	1.1	-1.8
Singapore	HIC Non-OECD	EAP	16.0	7.0	9.7	7.7	6.2	19.3	4.0	10.8	3.5	8.6
Kenya	LMIC	SSA	0.5	0.7	0.1	0.0	0.5	0.6	0.5	-0.1	0.2	0.7
Rwanda	LIC	SSA	0.8	0.8	0.1	0.2	0.7	2.3	1.1	0.0	0.1	2.3
Tanzania	LIC	SSA	3.6	1.3	na		3.6	4.4	0.9	na		4.4
Uganda	LIC	SSA	4.1	1.5	na		4.1	4.3	0.8	0.0	0.2	4.2
Ethiopia	LIC	SSA	2.9	2.0	na		2.9	1.3	0.9	na		1.3

3. Investment demand-side effects

The next step is to bring in the demand-side for investments in a country given its capital market supply characteristics. The demand schedule for private investment projects essentially comes from the returns to investment available from investment projects. Project returns to the equity holders are simply the revenues minus all the operating, overhead and financing costs (labor, materials, utilities, services, non-refunded indirect taxes, etc. plus depreciation and interest expenses) less the direct taxes on these returns to equity. The residual returns have to cover the minimum required return that equity holders need to investment in projects given their opportunity costs and the risks they face in the project. The annual demand curve for investment capital in a country, therefore, is derived from these rates of return before and after taxes as illustrated in Figure 2 for a high risk country with weak

integration into the international capital markets and low risk country well integrated into the capital markets.

Figure 2. Impact of tax on rate of returns to capital investment in high and low risk countries



It is clear from Figure 2 that higher investment risk conditions tend to have a number of impacts. They not only raise the required before and after tax rates of return, but also constrain the investments that are financially feasible ($I_H < I_L$ assuming similar demand schedules) and reduce the incremental impact of tax on the rate of return (magnitude of $\Delta I_H < \Delta I_L$ assuming similar taxes.) The reverse will also be the case that a similar reduction in tax in the two situations will cause a smaller increase in the high risk country because of the supply side effects even if the demand schedules similar. Typically the demand conditions will not be similar because of the different investment climates in the two types of country. The analysis below of the demand side, it is assumed that the supply elasticity is high or at the marginal capital can be obtained at a fixed price. This assumption generally results in an overestimate of the incremental impacts of tax rate changes given an upward sloping capital supply curve.

3.1. Aggregate perspective on investment demand⁷

Before considering the impacts of tax changes on investment in different sectors, it is useful to focus on some general aggregate impacts and drivers of the impacts of tax changes. The core considerations are first the different impacts of tax changes on marginal and infra-marginal (or redundant) investment projects and how these affect the tax revenue changes arising from a tax change of a tax incentive, or basically the revenue cost-effectiveness of a tax incentive.

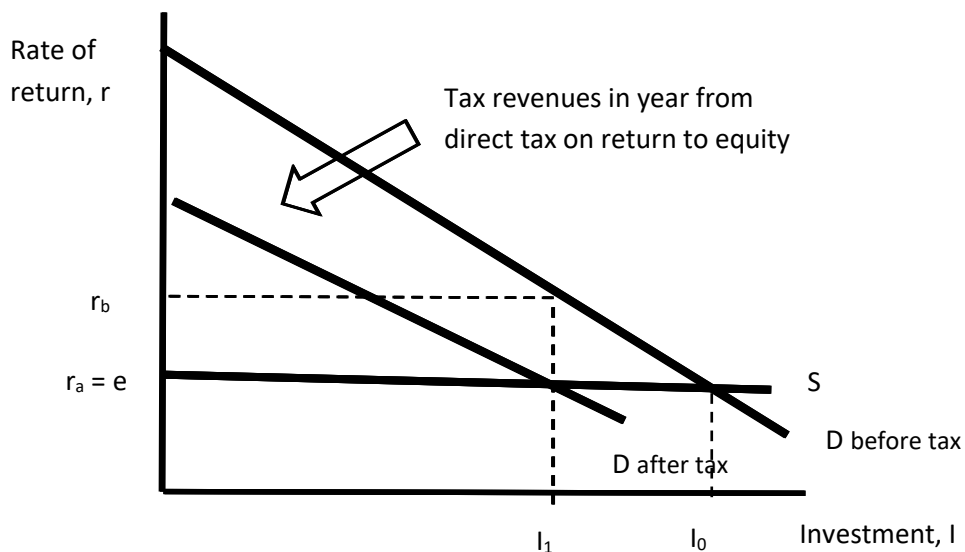
Figure 3 gives a base for considering a tax change in investment income whether a cut in the CIT rate or some other investment incentive. The before tax demand curve gives the rate of return on the investment before any tax. This could be the return on investment and then “investment” measures the total capital investment and the cost of capital “e” the weighted average cost of debt and equity, or it

⁷ This section draws upon Graham Glenday, “Tax Incentives,” Chapter 8 in G. Glenday and G.P. Shukla, *Public Finance in Open Economies*, DCID teaching manual, Revised 2008.

could be the return on equity and then “investment” measures the equity investment and the cost of capital “e” the required rate of return on equity. Here the latter is assumed as it then it gives a clear link to the CIT rate falling on the return to equity. Without any tax, investment is expected at I_0 when the return on investment has fallen to the cost of capital or $r_b = e$ and the net present value of the investment is zero. In this case, it is assumed that tax is imposed on a proportional fashion on r_b such that the after tax return now equals the cost of capital at I_1 . Now $r_a = e$ and the effective tax rate on this marginal investment (referred to as the marginal effective tax rate or METR) which is estimated as the relative reduction in the rate of return or $(r_b - r_a)/r_b$. If the return is on the equity invested and the tax base is measured as inflation-adjusted economic returns to equity then this METR will equal the statutory tax rate. Generally, as will be noted below, the tax may well not fall on inflation-adjusted economic income because of accounting conventions, tax accounting rules (including the treatment of losses) and tax policies (including tax incentive structures) such that the effective tax rate (ETR) may vary for different investments and not be proportional to the before tax rate of return as in Figure 3. In such a non-neutral tax structure, the rate of effective tax may vary up and down the investment schedule. Such cases (often the real situation) have to be handled on a case by case basis using the analysis of the expected cash flows or profits on a year-by-year basis over the future investment horizon to estimate the annual tax payments and the ETR for each investment project as the relative reduction in the rate of return caused for each type of investment. Here, to illustrate some important points about the impacts of tax incentives, the assumption of a proportional ETR for all investments will be maintained. A further elaboration that will be added below and may vary across investment projects are the impacts of indirect taxes that affect the prices received for products or paid for inputs which together could either raise or lower the before tax returns of the investment – the project could experience positive or negative protection.

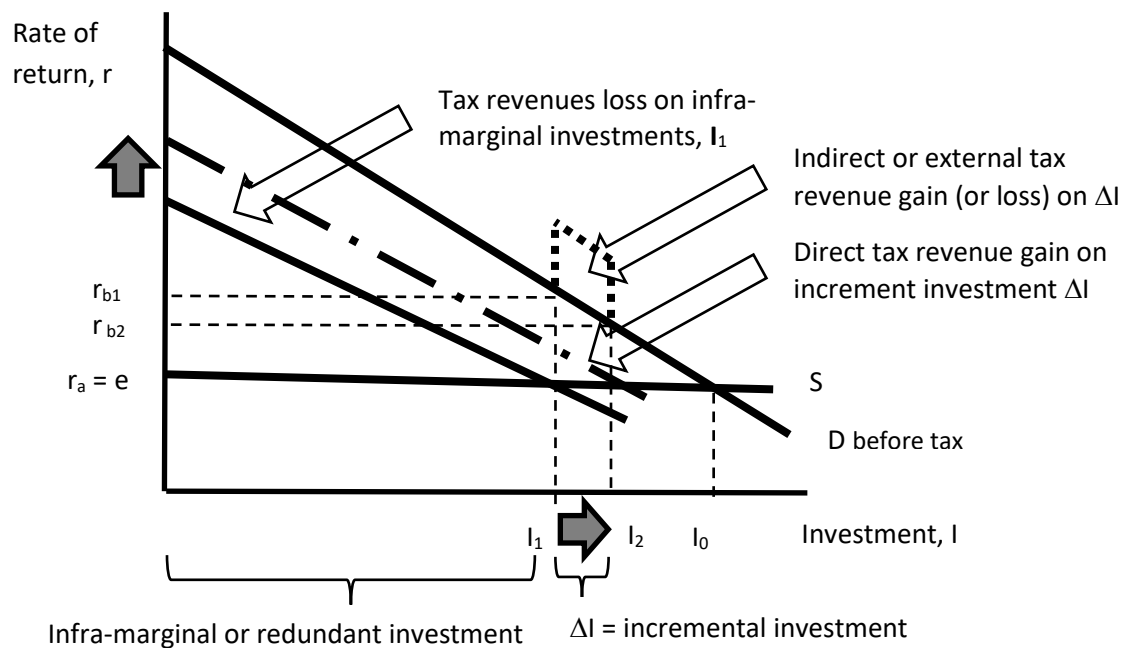
Figure 3 gives the annual expected tax revenues from the investments as the area between the before and after tax demand schedules up to the level of investment I_1 . Importantly for the CIT, Figure 3 captures the annual investment in a year, then the total CIT revenues will also include the CIT collected on the existing stock of corporate assets. Figure 3 just focuses on the new investments in a year or the change in the stock of assets.

Figure 3. Base case of tax on returns to investment.



The next step is to introduce an investment tax incentive that lowers the ETR and certainly the METR for the marginal investment. This could be a simple reduction in the corporate tax rate or some added deduction from income tied to the level of investment such as accelerated depreciation costs or partial expensing, for example, as will be discussed below. In any case it is assumed here that the ETR is reduced for all investments, and also for all existing assets in the case of a tax rate reduction. Figure 4 provides useful insights to the estimation of the tax revenue cost-effectiveness. The reduction in the effective tax rate shifts up the after tax demand schedule and reduces the METR by $(r_{b2} - r_{b1})/r_{b1}$. The induced incremental investment ($\Delta I = I_2 - I_1$) results in two changes in tax revenues. First, the direct tax collections on the incremental investment, and second, potential indirect revenue gains through other added taxes on any added employment or product sales induced by the incremental investment. This indirect tax gain could be reduced (or turned into a loss) if the tax break induces transfer pricing actions that cut income tax revenues. Importantly, the reduced ETR on the infra-marginal investment I_1 (that would have happened anyway at the original higher ETR) gain from the tax cut as well. This tax loss could well overwhelm the tax gains on the incremental investment. In the case of an across the board cut in the CIT rate, the tax loss expands out to the corporate returns on all existing assets as well.⁸ For incentives such as partial expensing or accelerated depreciation that are keyed on the new investment in Figure 4, then initially the tax loss is limited to these new investments and excluded from the existing stock of assets but if the incentive is retained and old depreciated assets are replaced by new investments, the cost base of the incentive becomes available to all qualifying assets. Which causes the larger tax loss then becomes an issue of the relative size of the limited tax incentive relative to the size of the broader based tax rate cut.

Figure 4. Impacts of a tax incentive on investment and revenues



⁸ The tax loss on the returns to existing assets in the corporate sector could be reduced to the extent that at a lower CIT rate businesses can delay scrapping old depreciated assets for a period.

Another obvious inference out of Figure 4 is the apparent attractiveness of limiting the tax break, however it is delivered, only to the incremental investments and not at all to the infra-marginal investments so that only tax gains are achieved only with the incremental investment. This requires some government body to be able to “pick winners” amongst the private sector of a very special kind, namely, all the investments that would not have happened without the tax incentive, but now are induced to invest. Section 4 discusses the general failures of most of these selection bodies in this respect. In fact, they are more likely, for reasons explained below, to only assist the infra-marginal investors.

The relationship tax relationship in Figure 4 for the effect of cut in the ETR can usefully expressed as follows:

$$dR/R = (dt_c / t_c) (1 + \eta [t_c + \chi/r_b]) / (1 - t_c) \quad (1)$$

where R = revenues from tax on the returns to equity from the annual investments
 dR/R = relative change in revenues caused by the relative change in the effective tax rate
 t_c = effective tax rate on returns to the equity investment
 dt_c / t_c = relative increase in the effective tax rate on returns to the equity investment
 η = demand elasticity for equity investment relative to the return on equity before tax
 χ = incremental tax externalities in % per \$ investment gained in other markets through incremental employment, production, etc. induced by the incremental investment
 r_b = return on equity investment before tax
 χ/r_b = tax externality relative to the before tax return

Based on expression (1) it is clear that for a tax cut ($dt_c < 0$) to be cost-effective, that is actually have a revenue increase, then $(1 + \eta [t_c + \chi/r_b])$ has to be negative. $(t_c + \chi/r_b)$ is expected to be less than unity given a CIT rate (t_c) of less than 40%, and from Annex B it is seen that high estimates of (χ/r_b) of 40%. This then requires a negative price elasticity of demand for investment that has to be highly responsive (more elastic than about -1.8, say) to achieve a positive change in revenues. Some subsectors like exporters could generate higher externalities (as illustrated in Annex B) that lower the required elasticity to around -1. Annex C, however, shows why when looking at aggregate private sector investment it is not expected that the price elasticity of demand for investment will be elastic, rather it is more likely that they will be inelastic (in the range of -0.3 to -0.8).

The analysis behind the estimates in Annex C assumes that the prices of all the inputs into production (materials, services, utility etc.) remain fixed as the level of investment changes and the only issue is the choice of labor and capital to be employed out the value added of supplying the aggregate demand. Clearly, if expansion in production faces key blockages and bottle necks in the supply of these inputs in the economy such as electricity energy shortages, scarcities of serviced land, technical skills, or raw materials of sufficiently good quality, limited transportation and port capacity, and delays in regulatory approvals, then it is expected that the costs of incremental production will increase with increased investment such that the value added available to the new investment declines and, critically, the returns available to the equity investors will be reduced as the production and investment expands. This means that the elasticity of demand will be even more inelastic than predicted in Annex C. This implies that a broad-based investment incentive will generate a revenue loss even after including the external revenue gains. Given that tax revenue are required by the public sector to expand the supply of infrastructure and utility services, skill training, etc., then either the investment climate is further

damaged or the government has to raise offsetting tax revenues elsewhere in the economy which in turn will contract domestic demand. In either case, the tax incentive becomes a self-defeating and damaging feedback loop in the economy.

This results in the common findings and advice concerning investment tax incentives, especially for lower income developing countries, namely, that investment tax incentives should be reduced or minimized and the government focus on improving investment-supporting infrastructure and utility services and other aspects of the investment climate. While investment tax incentives may have an impact under certain circumstances, more generally it is far down on the listing of investor considerations in making investment decisions. An international study by MIGA (World Bank) in 2002 found that national taxes only ranked 11 out of 20 criteria in determining the location of investments.⁹ In Annex D, the results of surveys of investors in many countries in terms of whether tax investment incentives affected their decisions only show 16% on average being affected. In an important study of the effects of investment climate (IC) on rates of FDI, Parys and James found not only the usual positive relationship between IC and investment, but also that the impact of investment incentives declined with as the IC worsened. This arises from the negative feedback between revenue loss causing poorer public investment and maintenance of the IC.¹⁰ These same findings and recommendations for developing countries are found in a study by Bolnick of investment incentives in SADC countries¹¹ and in a major World Bank compendium of theoretical and empirical studies of investment incentives edited by Shah.¹² This also explains why in cases where countries have cut or withdrawn some income tax incentives, no adverse impacts on investments arose, such as the case of Brazil, Indonesia and Mexico.

While the above analysis and findings generally argue strongly against broad-based investment incentives, are there specific sectors in an economy with an appropriate investment climate where arguably investment may be both responsive to the incentive and generate net positive economic externalities. The next sub-section addresses this issue. The following sub-section addresses the issue of looking at the broader modalities of private sector investment activity.

3.2. Sector specific differences and incrementality

When the private sector is broken out into sectors to consider whether different tax incentives could be justified, the division into **exportable, importable and non-tradable sectors** becomes useful. The non-tradable sector will typically be characterized by normal domestic demand conditions such the unattractive cost effectiveness arguments made above would apply. In addition, most of the public sector falls in the non-tradable sector.

The tradable sectors are world price takers such that the price elasticities of demand from their products are likely to be high such that the investment price elasticities of demand could be high (more elastic than about -1.8, say) and move into this cost effective range as illustrated in Annex C. The

⁹ See Box 2 in Russell Krelove, Selcuk Caner, and Timothy Dehan, "Ethiopia: Tax Incentives, Tax Expenditures, and Transfer Pricing," IMF, February 2012

¹⁰ Stefan Van Parys (IMF) and Sebastian James (IFC), "Why Tax Incentives may be an ineffective tool to encouraging Investment? The role of Investment Climate," Working Paper 2010/676, University Gent, September 2010

¹¹ Bruce Bolnick (Nathans), Effectiveness and Economic Impact of Tax Incentives in the SADC Region, Report for USAID/RCSA, SADC Tax Subcommittee, SADC Trade, Industry, Finance and Investment Directorate, February 2004

¹² Anwar Shah (editor), Fiscal Incentives for Investment and Innovation, World Bank, Oxford University Press, 1995

consideration of investment incentives in for tradable sectors also has to be considered in the context of the net effective positive or negative protection already being provided by the indirect tax system. Investors in the importable sectors typically experience net positive protection unless their outputs are duty free or have significantly below average import duty rates. By contrast, the exportable sector typically experiences negative protection through import duties on their inputs while the product earns the world price. Occasionally export taxes on a major raw material may provide assistance to a domestic user of the raw material whether for export or domestic production. While domestic indirect taxes (VAT, excises, etc.) are normally neutral to investment choices, where these taxes on inputs are not exempted, credited or refunded, they effectively reduce any trade tax protection or even result in negative protection. The exportable sector is particularly vulnerable to indirect taxes stacking up in their input costs. The details of the incentive effects trade and domestic consumption taxes are discussed further in section 4 below.

Based on the above, it is apparent that any unprotected or negatively protected tradable sector contains likely candidates where a tax incentive may be cost effective and possibly economic efficiency enhancing. (Exportable producers are also consistently generating net foreign exchange earnings. This earns the foreign exchange premium for the economy – typically in the range of 5% to 10% of the net foreign exchange earnings.) One proviso needs to be added, namely, that investments also need to be identified as **location specific or mobile investments**. Essentially all non-tradable sector investments are location specific to a country (but not necessarily a specific region or location in the country), while some such as many public sector infrastructure services may be highly specific to a location such as a road or port. Location specific investments also arise even in the tradable sector. Most common would be investments that are based on natural resource exploitation whether farm land, a water source or some mineral deposit. This is important when considering the role of investment incentives for location-specific investments especially in the tradable sector. Does tax competition make sense to attract investors (foreign or domestic) to undertake a location-specific investment whether it is a mine or an electricity plant? Consider, for example, a mining project that is marginally profitable could be made attractive to a less efficient mining company in terms of technology, management skill or risk management. This is not a desirable result as it limits the return (which includes any tax flows) to the country and often, if prices are rising, it induces mining to start too early. For an attractive mining prospect it could induce an MNC to switch its investment choice between available prospects, but if the mining prospect is genuinely attractive another company, possibly an MNC, would exploit the resource – mining is a competitive industry. The revenue cost of the tax incentive is then a straight loss to the country. The basic issue with any location specific investment is whether it is financially attractive to investors? If it is there is no gain from offering tax incentives. It would need to be shown for a financially unattractive investment that other significant economic externalities would be forgone without some financial incentive to induce private investment – this may be the case with some public sector projects, but is less likely with typical private sector ones.

Mobile investments that can readily choose between countries as to where to locate their production platforms pose different issues when considering investment incentives. Mobile business activities typically require (i) low transportation costs of inputs and/or products relative to their unit values and (ii) possibly also low-cost of moving their production capital. The “footloose” activities such as clothing and footwear and internet-based services tend to have both characteristics, whereas manufacture of electronic components, for example, typically only has the first characteristic which means it is less mobile once it is established in a particular location. Attractiveness of a location depends in part on the expected taxes, but more importantly on the whole range of factors that are typically captured in indicators of the investment climate, competitiveness and/or country risk ratings of a

location. Where a country is in a region with many similar countries in terms of their investment climates, investment incentives can be the added inducement to switching location of production. It is not surprising therefore that the Asian region has seen fierce competition to attract manufacturing investment as Asia has emerged as the manufacturing hub of the world. The ability to switch investment locations effectively raises the price elasticity of demand for investment in these countries that are competing for investment. The issue then becomes one of ensuring that when the investments are cost-effective, net economic gains are achieved. As discussed further below, this will depend in part upon the modalities of investment incentive delivery to ensure that the right investments are induced.

Survey data in Annex D supports the arguments above. On average 74% of foreign investments were redundant or infra marginal, but where export businesses or internationally mobile investments were identified in two cases the redundant investments dropped to 15% and 52%.

3.3. Modalities of investment

The last important classification of type of investment project concerns the modality of investment. Basically, whether an investment project is conducted by a purely **commercially driven private sector entity** or some form of **publicly controlled entity** is important both in assessing the need for and modality of incentive delivery. The main issue here in the context of investment incentives is an issue of what the public sector actually knows about the investors' actual investment plans and intentions -- a basic issue of information asymmetry. This affects any decisions about the modalities of investment incentive delivery as well as whether any incentive is justified and its relative strength. The options are laid out in the next section.

For the most part, private sector investors operating within private markets make their own investment decisions. The government only gets to know about them ex post based on economic statistics, tax returns and possibly corporate accounts (depending on the nature of the legal entity doing the investing.) The government can analyze the aggregate behavior of different groups of investors in different sectors, regions, etc. and come to some conclusions about the economic attractiveness of these group behaviors. It may decide to incentivize changes in the private behavior to try to capture (avoid) some positive (negative) externalities being undervalued by the private investors. In this process it still lacks the information about the individual motivations and calculations of any particular investor. This biases the possible mechanisms for efficiently and effectively motivating these investors.

By contrast, where the public sector is involved directly in investment decisions, even where these investment are implemented by private sector entities, then the public sector typically has (or should have) access to both ex ante and ex post information about investment plans and performance. These types of investment could be occurring in the context of price regulated utility sectors (such as electricity, water, transportation or telecommunications), or public private partnership (PPP) arrangements to deliver a wide range of public services (which typically are implemented through a special corporate entity operating with special contractual arrangements), or it could be the private sector contract to deliver or construct infrastructure or other capital item. These investment situations clearly change both the nature of ex ante and ex post information which changes the possible incentive modalities that can (or should) be used.

4. Modalities of incentive delivery

Basically there are two broad ways of delivering incentives to private sector entities, namely **discretionary** or **automatic**. Discretionary mechanisms imply some investment proposal application which is subject to scrutiny and selection by some ministry, board, commission or authority. Automatic mechanisms imply some explicit set of conditions that if met lead to entitlement to the incentive. Public financial incentives can be delivered either as direct program expenditures through a budget process or as a tax expenditures – some special change in the tax structure applied to the business activity of an investor. Many of the problems in the revenue and economic impacts of incentives arise because of inappropriate application of these modalities.

4.1. Discretionary modalities

Discretionary modalities in the public sector occur in a range of forms and contexts, but all involve the public sector approving an investment implemented by a private company. First, discretionary incentives are commonly linked with the practice of having some investment promotion board/commission/authority (IPA) that may be given powers to award an incentive to applicants. A common case in which the IPA can grant access to a limited time tax holiday (or other tax incentive) based on some nationally determined criteria (often very broadly specified national priorities) to private sector companies undertaking activities ranging from export-oriented businesses to mining to a public utility investment. Second, in parallel, a regulatory agency may have powers to set or approve investments and output prices of certain public utilities with or without access to some tax incentive granted by an IPA or through the tax law. Third, a government ministry or special agency may negotiate and/or approve PPP agreements to deliver selected public services with certain government guarantees and possible payments to or from the contractor and with or without tax incentives. Finally, a government ministry or agency may be approving some budget-funded contract to supply capital goods and construction services where the contractor may or may not have access to tax incentives.

There are two basic criteria to judge whether the government needs to provide financial assistance or an incentive to a private entity to provide some service. First, the **project investment should be expected to be economically attractive or provide positive net benefits (or the net present value (NPV) from an economic perspective is positive).**¹³ Second, **the project should be financially unattractive to the private investors without any financial assistance or incentives (or the net present value (NPV) from the equity holders' or sponsors' perspective is negative.)** The second criterion is critical to ensure that the project and net economic benefits are incremental because of the assistance or incentives (or the investment would not have happened without the assistance or incentive.) Otherwise the project is redundant and infra-marginal and no extra net benefit is achieved, but a revenue costs is incurred. This is a revenue cost-ineffective project as discussed in section 2 above.

In the case of direct government capital expenditures that fund budget-dependent projects, clearly the investment is incremental as a result of the budget expenditure, the question then remains

¹³ Graham Glenday Kai Kaiser, and Tuan Minh Le “Approaches to Better Project Appraisal” Chapter 4 in Rajaram, Anand; Minh Le, Tuan; Kaiser, Kai; Kim, Jay-Hyung; Frank, Jonas, *The Power of Public Investment Management: Transforming Resources into Assets for Growth*, Directions in development ; public sector governance. Washington, DC ; World Bank Group (Sept 2014)

to assess whether it is expected to generate net economic benefits when the externalities (including the surpluses gained by the public service beneficiaries) are included. There is an additional issue of whether the government may be overpaying for the services if a particular contractor has access to investment incentives not available to others and hence wins a contract while also keeping part of its tax gains. If all bidders have access, then it is likely the bids will all be lower and the government should recoup its tax expenditure.

In the case of PPPs and regulated utilities incrementality is not in question as public assets are being used or a regulated provider is being permitted to move ahead with a project, but the financial viability is still of key interest. If the private supplier finds the project not financially viable, the entity may collapse or withdraw or demand some renegotiation of terms. Alternatively, the private provider may be significantly overcompensated. It is in this latter situation that tax incentives can readily result in major revenue waste. For example, a power provider is offered a tariff that is expected to cover costs of supply including normal income tax and then the company gets a tax holiday for seven years, say, such that the tax reduction becomes a source of super profits to the equity holders without any increased supply. If the power project had gone through competitive bidding based on the tariff, then a company with a tax holiday would be expected to bid a lower tariff that may be passed on to the distributors and consumers, but nevertheless the revenue loss to the government budget is incurred and needs to be offset. In the case of PPP contracts that are awarded on the basis of a “financial viability gap” (the private bidder pays the gap if this is a financially attractive project or is compensated by the size of the gap if financially negative), the estimation of the gap should take into account the financial impacts of tax incentives. This implies that in principle, there is no need to offer any special tax incentives to PPP operators because the normal taxes should be offset by direct adjusted viability gap payments and possibly output tariff adjustments.

Notice that in all these cases of public-determined investments the decision maker should have access to sufficient information about the expected financial and economic performance of a project, both ex ante and ex post, that the two criteria of financial and economic attractiveness can and should be assessed (particularly for all large investments.) Furthermore, there is no need to use tax incentives to support a project when direct and flexible expenditure tools are available (such as viability gap funding on a lump sum or annuity basis.) In fact, the tax incentives may just land up as transfers to the private provider when they are not taken into account in setting tariffs or assessing viability gaps or accepting bids. In addition, notice that in all these publicly determined cases the decision makers should have the powers and capacity to ask for and get sufficient information to conduct the required economic and financial appraisals. Clearly, where a decision making body does not have the powers or capacity to get the information or do the appraisal, or makes the decisions on other bases, then impacts are likely to be more random and more investments to be economically unattractive.

Major issues arises where an IPA is given powers to award investment incentives such as full or partial tax holidays to private market businesses. Issues arise on both the basic criteria. First, it is often the case the IPA does not have the powers or capacity to conduct economic assessments of proposed investments. This becomes especially problematic if a wide range of sectors are eligible to apply including importable and mining sectors and public-determined sectors. (The Boards of Investment (BOI) in the Philippines and Thailand are examples.) It becomes somewhat less problematic if the investments are limited to exportable sectors. (The Philippines Export Zone Authority (PEZA) is an example.) The more severe issues, however, arise with the ability to assess the financial viability of the project and importantly whether the awarding of a tax incentive is expected to change this from negative to positive project (or identify incremental investments.) If not, the tax incentive is likely to be

redundant. As mentioned above the IPA is typically faced with information asymmetry – all the actual information and analysis are in the hands of the private company. This first limits the ability of the IPA to conduct any economic analysis. Second, the private company is likely to bias their projections in line with expectations, biases or criteria of the IPA which may be hard to verify or counter. Third and more important, recognizing that the design and planning of a major investment is costly, it is questionable that a company would make the effort to design, plan and present an investment project that is marginal financially and will only be implemented if a major tax incentive is awarded by the IPA. This implies that all the serious proposals are likely to be viable without the discretionary incentives. Finally, the opposite approach could be taken by private companies, namely, they present low effort speculative proposals to test whether an incentive will be awarded before putting in the real effort to design a real project. It is known that many approved projects do not get implemented. The bottom line is that IPA-type discretionary mechanisms are not an effective way to approve access to any tax incentive to create incremental activity unless there is narrow range of activities being screened such as export-oriented businesses only.

A further generic issue exists in most countries using an IPA or other body with discretionary powers to award tax breaks to private sector investors is that the loss in tax revenues is neither estimated nor charged against any budget expenditure limit. This is a crucial weakness in this approach that generates the need to review how incentives are awarded, delivered and controlled under the budget. If an agency is given powers to award tax incentives then the tax expenditure should be charged against their budget to control the cost. An exception occurs in cases where the government makes agreements for the private sector to deliver public services in exchange for a tax break. For example, a MNC mining company agrees to provide social services for workers and other at remote location in exchange for a tax break equal to estimated cost of services. But in these cases, both the tax expenditure and the social expenditure should become off-budget memo items so that the total government expenditure program can be seen and accounted for.

While IPA structures are often established ostensibly to attract major FDI, they are often captured by large domestic businesses that often can gain more out the tax incentives than new foreign businesses as will be discussed further below. Along the same lines, they can also become a political tool to direct benefits to political supporters.

By contrast with tax incentives for private sector market activities, discretionary mechanisms are essential to deal with (i) direct government capital procurement, (ii) PPP-type arrangements and (iii) price-regulated public utilities. This makes the added use of tax incentives redundant and the viability gap should be dealt with through the direct expenditures.

In dealing with private investors, aside from setting up “one-stop” investment facilitation arrangements to deal with licensing and regulatory approvals, jurisdictions faced with competition in attracting mobile investments such as US state governments take a more direct and flexible approach to developing packages of agreed assistance in terms of access to land, utilities, etc., that may be crucial to a particular investment. The funding of these agreements is typically explicitly through the budget and may also contain a component of costed tax breaks.

4.2. Automatic incentives

While automatic direct expenditures do occur such as in the area of mandated social security systems, in the area of investment incentives these are typically tax-based investment incentives. Given income taxes in nearly all countries are administered on a self-assessment basis, the criteria or conditions for access to an automatic tax investment incentive need to be clear enough to be self-assessment and potentially subject to ex post audit. For example, conditions could include location, sector, asset type, size or value, timing, etc. or could be fairly general such as all computer purchases.

By contrast with discretionary mechanisms for awarding incentives, private investors can generally have more certainty that they can capture the incentive value and hence could undertake marginal investments as illustrated in Figure 4. Importantly, all the issues discussed above about the responsiveness of demand and size of the external or indirect incremental tax revenues and other externalities induced by the marginal investment come into play in determining the criteria for which types of investment should qualify for tax investment incentives.

Clearly if a tax investment incentive can be well targeted (such as to include only mobile exportable sectors), it becomes an efficient way of delivering an incentive compared to the discretionary mechanism which can have both high administrative and compliance costs aside from their difficulties in targeting incremental investments as discussed above.

If investment tax incentives are to be used, then there are a range of types of incentive that need review and discussion. This is the next focus.

4.1. Direct tax Investment incentives¹⁴

Direct tax incentives could be delivered as cuts in the ETR in the income tax (including CIT) or property tax as in Fig. 4 above. The focus here is on the income tax in a developing country context.

4.1.1. General considerations

There are a number of general considerations and issues in assessing different income tax incentives that are often overlooked or omitted in comparing or assessing tax incentives mechanisms. These are noted before looking at basic types of incentive.

(a) **Expected inflation** has two types of effect on the real rates of return on an investment. First inflation is a tax itself on the nominally denominated working capital (cash and net receivables). The expected real return before tax is reduced by inflation. Second, inflation changes the real ETR if the tax accounting rules do not provide for the taxation of real inflation-adjusted income. Two of the inflation impacts raise the ETR and one lowers it. (i) Inflation with FIFO accounting for the costs of withdrawals from inventory cause an increase in the real taxable returns and ETR. (ii) Depreciation allowances based on the historical cost of depreciable assets decline with higher inflation causing the ETR to increase. (iii) The deduction of the nominal interest rate on debt allows the deduction of the inflation-compensation

¹⁴ This section draws upon Graham Glenday, "Tax Incentives," Chapter 8 in G. Glenday and G.P. Shukla, *Public Finance in Open Economies*, DCID teaching manual, Revised 2008.

component of the interest rate, and hence, causes the ETR on the returns to equity to decline. The net effect of inflation depends upon the mix of assets and liabilities and tax accounting rules in a particular country, but typically for capital-intensive projects in using depreciable assets and modest debt leverage, inflation lowers the real after tax rate of return or increases the ETR.

(b) Investment tax incentives can undermine the neutrality of the income tax by distorting the choice of assets of different lengths of life. This comes about when an incentive is tied to the amount of the investment such as an investment deduction or credit. The effect biases asset mix choices towards using shorter lived assets because every time they need to be replaced they are awarded the tax incentive -- the more rapid the replacement the more frequent the use of the incentive. One critical method for countering this effect is to reduce the depreciation base for any upfront deduction or credit to ensure that not more than the total cost of the asset becomes deductible. This base "grinding" or split system is discussed further below and is an important feature in assessing the strength and biases of an incentive and often omitted in making cross country comparisons of investment deductions and similar tax incentives. An additional important observation is to note that inflation impacts asset mix choices in the opposite direction if depreciation allowances are based on historical costs. The inflation impact biases choices towards longer lived assets. In fact, when any investment-based incentive is offered in a country its first effect is to offset the inflation impact and whether it offers a net reduction in the ETR depends upon the relative strengths of the two effects. In many situations, for example, accelerated depreciation may merely be offsetting the tax increases caused by inflation and not be a real tax cut.

(c) The tax treatment of taxable income losses has impacts both on the real ETR and the riskiness of an investment. While an income tax reduces the real rate of return expected by equity holders from an investment project, if the equity holders get back the tax value of losses, then the government is effectively sharing in the project risk and this reduces the riskiness of the project. If the value of the tax loss cannot be fully captured by the equity holder, however, this causes the ETR to increase and the riskiness to increase compared to symmetrical tax treatment of gains and losses. Equity holders get full loss offsets (or the full tax value of losses) in some situations: (i) the business has other profit making streams of income from which the losses can be deducted for tax purposes, (ii) the corporation can report consolidated tax returns over all closely related businesses, (iii) the tax loss making company merges with a profit making company, or (iv) loss carry backs are provided for in the law.¹⁵ If losses are not offset by any of these mechanisms most countries allow loss carry forwards on a FIFO basis for a limited time period. Five to seven years are common time limits. Losses that cannot be absorbed within the time limit are cancelled. The tax value of loss carryforwards declines with the length of the delay and the nominal cost of capital. In countries where it is possible to defer taking a depreciation allowances for tax purposes, some amount of losses can effectively be carried forward indefinitely. Given that some tax losses are generated by investment tax incentives that allow increased and/or accelerated deductions for the use of capital, then if the full tax value of these losses cannot be captured the value of the tax incentive is reduced. It is also the case that different companies will have different capacities to capture the full tax value of tax losses. It is typically the case that larger existing domestic conglomerates or companies with a diversified range of business will be able to immediately capture the full tax value by one the four mechanisms noted above. By contrast, new, small or foreign companies (the common intended target of investment incentives) may be forced to carry losses

¹⁵ The tax law allows the loss to be carried back to a previous year (and sometimes 2 or 3 years) and the tax for that earlier year adjusted and any tax refund owing is made. This is allowed in Belgium, Canada, France, Germany, Ireland, Japan, Netherlands, Norway and the UK and US, for example.

forward and may never capture any tax value. This results in the observation that it not uncommon for large existing companies to lobby heavily for investment tax incentives and effectively use any discretionary body approving access to tax incentives as they get the highest benefit out of them.

(d) There is **no one marginal effective tax rate (METR) is any country** even if all businesses face the same CIT rate. METRs will be vary with the inflation rate, tax accounting rules, tax depreciation rates, mix of assets and liabilities, tax loss treatments and mix of investment tax incentives offered. In addition, some tax incentives can even work against each other. For example, a company awarded a tax holiday for 7 years may estimate its METR to be halved, but if it is also obliged to take an up-front investment deduction or use accelerated depreciation rates for tax purposes , the its METR will rise dampening the tax holiday impact. Furthermore, while a perpetual tax holiday would indicate a zero METR, it is possible for investment tax incentives to drive the METR negative. Aside from transfer pricing-induced tax losses or losses of a company with a tax holiday on part of its business being absorbed by other parts with taxable profits, upfront investment tax incentives can yield negative METRs if a strong incentive is provided for assets that form a large share of the total assets and high the debt leverage is used for the investment.¹⁶ In this case the incentive deduction may exceed the actual equity invested in the asset and hence the METR goes negative. Another key element that can affect METR on MNCs undertaking FDI is the interaction between the host country and home country tax systems where the home taxes on a residence or world-wide basis as opposed to a territorial basis. In such cases the MNC would be subject to tax on repatriated distributions in its home country as well but would also possibly qualify for tax credits on CIT paid in the host country. Where the ETR has been lowered in the host country this reduces the foreign tax credits and increases the possibility of added taxes payable in the home country which results in a transfer of revenues to the home country and a loss of the impact of the tax incentive by effectively raising the METR. In such cases, MNCs try to defer repatriation of profits to delay paying added taxes and dampen the impact in METR, but eventually there is some real impact that partially undermines the effectiveness of the tax incentive in these cases.

In addition to these basic and generic considerations, a range of tax incentives are employed individually and often in combination. The major types are considered here.

4.1.2 Major types of income tax investment incentives.

1. **Full and partial tax holidays.** These have been commonly used in the case of attempts to attract FDI or attract investment into special economic or export zones in the international tax competition or to support specific sectors or regions in a country. A tax holiday is typically offered for a limited period and may be followed by a reduced CIT rate for a further period or in some zones indefinitely. While tax holidays have simple advertising or promotion appeal they are known to have many undesirable features aside from often being major tax losses on infra-marginal investments and added administrative costs in their management as already discussed above. They cause obvious distortions if the beneficial company is competing with other fully taxed domestic businesses. They also open up revenue-losing transfer pricing opportunities both domestically and internationally. They have unattractive interactions with investment deductions and tax losses incurred during the holiday period that either make the incentive less valuable or induce ways to carry

¹⁶ The CIT only taxes the return to the equity holders. While the tax incentive may be based on the total investment, the equity holder may only be financing part of this investment such that the investment deduction can exceed the income from the share of the total assets that is equity financed.

losses forward to the taxable period. They bias investment towards shorter lived projects that may largely be completed within the holiday period and also set up incentives for companies to reinvent themselves at the end of the period as new companies so that they could again requalify for the tax holiday. Unlike investment based incentives, there is no effective way to tax back the tax breaks awarded at the end of the period if the company artificially stops operations rather than continue a long-term business.

2. **Accelerated depreciation.** Tax depreciation allowances are raised above economic depreciation rates by shortening the asset lives under straight line depreciation methods or increasing the rate of deprecation under declining balance depreciation. Accelerated depreciation can be offered to specific asset classes and/or specific business sectors. It results in a tax deferral benefit that lowers the METR because of the lower taxes in the early years following the investment, but higher taxes in the later years than would payable under economic depreciation. With inflation-adjusted taxable income, accelerated depreciation biases asset choices towards shorter lived assets. As pointed out above, this result is confounded in the case of historical cost-based depreciation. Setting aside the tax-reducing impact of nominal interest deduction, inflation reduces the real depreciation allowance thereby raising the METR. Once the depreciation rate has been accelerated by at least the inflation rate, then the METR starts to fall with increasing acceleration and the bias towards shorter lives sets in.

3. **Investment deduction, full and partial expensing, and the split rate system.** Investment deductions (or allowances) are awarded as an extra deduction based on the amount of the capital investment. This could be targeted at specific asset types and/or sectors. For example, an investment deduction of 20% of all machinery and equipment invested in the export-oriented manufacturing sector. *This deduction is often awarded in addition to tax depreciation allowances such that over 100% of the initial asset value is deducted.* This type incentive is biased towards short lived assets as it is awarded each time the asset is replaced again in the future, and hence, more often for shorter lived assets. To reduce and potentially remove this bias and keep the total deduction to 100% of the purchase cost, some governments (including Canada and Kenya) reduce the depreciation base by the amount of the deduction. This base grinding or reduction, is referred to as a “split system” under which part of the asset gets the deduction or expensing and the other part gets regular tax depreciation. This is also referred to as partial expensing. For the example of the 20% added deduction, it becomes 20% of the asset gets 100% expensing and 80% gets tax depreciation allowances. This type of partial expensing or split system is an attractive approach to investment incentives as (i) make the incentive explicit (the share expensed), (ii) limits the total deductible amount to the initial asset value, and (iii) with low or no inflation has little or no bias in the choice of length of live of the asset. Investment tax credits can be structured in a similar fashion to partial expensing, but are more complex particularly in a developing country tax administration context.¹⁷ The partial expensing

¹⁷ Note that a tax credit is a reduction in tax payable and the credit rate of the invested amount is “c” and CIT rate “t”, then it is equivalent to an investment deduction of the amount c/t . For example a credit rate of 6% with a CIT rate of 30% is equivalent to a deduction from income of 20% of the invested amount. Just like with investment deductions, this deduction equivalent amount should be removed from the undepreciated balance in calculating depreciation allowances. The more serious administrative complication arises with the treatment of excess credits when the investment tax credit exceeds the tax otherwise payable. Typically, in parallel with tax losses a tax credit

approach also makes judgements about avoiding negative METRs more manageable. As pointed out above, when investment incentives are based on the total asset value purchased and not the amount of equity invested in it, then if the share of assets qualifying for expensing exceeds the amount of equity investment, the METR becomes negative. Given partial expensing can only apply to depreciable assets, then the maximum share expensed is determined by the composition of assets and the degree of debt leverage. Limiting partial expensing to about 50% helps avoid negative METR investments. Note that while full expensing is a common provision for R&D expenditures in many countries (unless R&D tax credits are awarded), R&D capital investments are typically a small share of total investments and are typically not highly debt leveraged.

An important additional feature that should be included in the income tax of any country using accelerated depreciation, investment deductions and partial or full expensing is the inclusion of **tax recapture provisions** on the sale of any depreciable asset. In the case of asset-by-asset depreciation, this means that any excess of the sale price over the remaining undepreciated value of the asset is taxed as ordinary income. In the case of pooled depreciation of asset classes, the sale value is deducted out of the remaining undepreciated value in the pool and, if the pool value becomes negative, then that amount is subject to tax as ordinary income. This effectively **taxes back any incentive deduction** that has been taken. This has two important features. First, it prevents investment tax incentives from being used to buy and sell assets to capture the tax incentive rather than use them productively. Second, it removes any concern about the subsequent buyer also gaining access to the investment incentive on previously used assets. This capacity to recapture investment tax incentives if the asset is no longer used is a key feature that is not available with tax holidays.

4.2 Indirect investment tax incentives

The positive and negative effects of indirect taxes on investment incentives are pervasive in an economy, complex and often not transparent. Typically, the focus is on the effective protection afforded import-competing businesses by the import duties, but the impacts of both trade taxes and domestic consumption taxes are more wide reaching and often negative. Most of the policy focus is historically has been on rationalizing the effective protection arising from trade taxes and also on removing consumption taxes from the inputs to business, especially in the production of exports. Importantly, from the perspective of investment incentives, indirect taxes can provide large reductions or increases in the METR on an investment that may either offset or magnify the income tax investment incentives.

4.2.1 Trade tax effects

In the importable sectors, all goods with positive import duties on the product have their output price raised so that the METR of producers decreases. To the extent that import duties fall on the goods used as inputs (including capital items), the net subsidy or net protection is reduced. *The combination of net trade protection and even a modest income tax investment incentive can drive the METR to a highly negative rate.* If the product is duty free, then any import duties on the inputs results in negative

carryforward account gets established as well as rules about the length of time credit carry forwards are permitted.

protection and increases the METR faced by the producer above the statutory CIT rate. In these cases, any income tax incentive may or may not reduce the METR below the CIT rate.

In the exportable sectors, the nominal output protection is zero so that any import duties falling on input goods results in negative protection. Often countries have mechanisms for removing all or some of these import duties out of the costs. These are discussed below. At best, export producers receive zero protection, but any residual input tax costs that remain increase the METR. Though less common internationally, export duties act as a net tax on the exporters of these taxed items, but as a net subsidy on any users of these items as inputs. For example, an export tax on raw hides and skins benefits the tannery and leather products sectors.

In the case of non-tradables, any import duties that are included in their costs reduces the return to capital to the extent they cannot fully pass on the tax cost. This increases their METRs. Typically, there are no mechanisms provided to remove these input duty costs.

Overall the pattern of trade taxes in a country combined with the mix of different costs of producers leaves a complex web of positive and negative protection in the economy. Trade tax reform has long advocated the rationalization of import duty tariff structures to lower and more uniform rates. This leads to more predictable and uniform net protection rates. This then helps with the need to coordinate the income tax rate structure with the trade tax structure.

4.2.2 Domestic consumption tax effects

Generally, broad-based consumption taxes such as a credit-method VAT are designed to be neutral tax systems to investment decisions at least in theory. All businesses with taxable supplies should get back all taxes on inputs and all exports are zero rated and get input tax refunds. In practice all businesses supplying exempt goods (such as governments, many NGOs and charitable organizations, financial institutions, small businesses, many farmers, etc.) do not get credits or refunds for taxed inputs. Alternatively, even businesses that in principle should have input taxes credited or refunded, where there are delays or carry forwards, they also suffer some full or partial input tax cost impacts. To the extent that these input tax costs cannot be passed on, they reduce the return to the equity holder and raise the METR. To the extent that they do get passed on they may impact the costs of the next business down the value chain and get stuck in their costs, particularly if they are exporters or other producers of tradables.

Some clear patterns of VAT causing negative protection for domestic producers occur where some importables like pharmaceuticals or fertilizers are exempted under a VAT to assist the households and farmers rather than lowering or zero rating the VAT rate. In such cases, the domestic producers would effectively be competing with VAT free imports while bearing input VAT costs. Such businesses are clear cases of negative protection and an increase in the METR caused by the VAT exemption.

4.2.3. Mechanisms to remove indirect input taxes that cause negative protection

Under the credit-method VAT there are no special mechanisms to avoid input VAT being caught in the value added cost chain. The general mechanisms include expanding the coverage by minimizing unnecessary exemptions, broadening the taxed base, allowing voluntary registration for VAT and speeding up full VAT refunds. Where countries set up special export or economic zones that are effectively designated as being outside of the customs territory, then the VAT is removed from the

imports and internal trades of these zones and only charged when goods flow from the zone into the domestic territory. Businesses in these zones can minimize the VAT input tax problem on goods purchases, but may still have hidden VAT cost in any exempt services such as financial services supplied from the domestic territory.

Within customs systems a number of mechanisms typically exist to attempt to minimize the negative protection of import duties getting included in input costs:

- i. As noted under the VAT, **special economic or export zones** operating outside of the customs territory allow businesses to import inputs duty free whether from the domestic market or international market. Exports to the international market therefore should avoid import duties in their costs. While this mechanism is effective at removing indirect taxes from export costs, it is limited to the businesses that choose and are permitted to trade in the zone. Zones also have the issues of requiring significant investments in infrastructure, constraining the location choices for production and often requiring dedication of production largely for export rather than a diversified mix of domestic sales and exports. While some countries create zones for individual plants, another option is manufacturing under bond for individual plants.
- ii. General provisions that exist in most customs laws are **duty drawback provisions for exporters**. These provisions allow exporters to apply for a refund of duties paid on designated imported inputs into the exported goods. The duty drawback approach has a number of limitations, particularly in developing country contexts, which undermine the investment and export promotion aspects of the program. First, customs agencies are not usually organized to deal with domestic businesses and usually do not refund taxes such that refunds are difficult to obtain and often delayed. Customs agencies need to develop and verify all the input-output relations for an export business. Second, typically drawbacks are limited to imports physically incorporated in the export and not available to inputs otherwise used in the production of exports. Third, the post export payment on a delayed and risky basis makes contracting to supply exports less attractive if viability relies on the duty drawbacks. Duty drawback programs are seldom attractive from the export company perspective.
- iii. Given the limitations of duty drawback programs in export promotion, countries (such as Korea, Kenya, and Indonesia, for example) have established **special duty exemption programs for exporters** which give upfront duty exemption on the designated imports of inputs. The revenues are then protected by bonds that are only cancelled once the use of the exempt imports has been periodically reconciled based on agreed input-output relationships. The scope of these programs is often wider than other programs. They cover all imports used in production and often also recognize that the negative protection problem is wider including any duty free goods or aid-funded goods. Special agencies are sometimes established to oversee and/or assist customs in the administration of the programs. These programs are typically more attractive from the exporter perspective as they allow upfront costing of meeting an export or duty-free production contract. They also allow businesses to have mixed domestic sales and export production and flexibility in choice of production location that is not available in many special zones.

When it comes to classifying customs exemptions in the context of tax expenditure accounting, the mechanisms to remove customs duties from the costs of exporters are often treated as part of the normal or benchmark tax structure and not treated as special exemptions to be costed as tax expenditures. At the same time to track the effectiveness of these policies, the amounts of tax should be monitored and reported as a memo item.

5. Summary of findings and framework for managing investment tax incentives

In this section, the lessons and findings from the previous sections are summarized and cross tabulated in Table 2 to provide a framework for directing reforms of investment incentive policy.

1. The strongest cases for cost-effective income tax incentives creating incremental investments exist in the **tradable sectors especially where the production location is internationally mobile**. See Figure 2, block A. Within this group, the **unprotected exportable and duty-free importable** sector are likely to generate net economic gains and may also be suffering negative protection through trade and domestic indirect taxes stuck in their costs. An important proviso in considering income tax incentives for this group (and, in fact, all tradables) is that the incrementality impact will be dampened if the country is experiencing any **shortages of key business inputs** – energy, transportation, port facilities, skilled labor etc.—as is common in many developing economies. Care needs to be taken that strong incentives do not exacerbate these situations and effectively undermine the cost-effectiveness of the incentive. It is advisable to keep tax incentives at modest levels as discussed below. There is a weaker incrementality case in favor of investment tax incentives for the exportable and duty-free importables that are country or locationally specific. See block B. In practice, it may be difficult to separate these sectors out from those in A if the incentives are delivered through a self-assessed income tax. International tourism hotels and facilities would typically fall in block B and in some countries they may be key net foreign exchange earners and employers.
2. There is a compelling case that priority should be given to establishing to reviewing and rationalizing domestic indirect tax structures and administration and to implementing broad-based flexible duty exemption programs to remove import duties from the input into the production of exports and duty free importables in block A. This is a preferred solution to attempting to offset these otherwise diverse negative protection impacts through income tax incentives.
3. In the cases importable sectors receiving positive protection through the customs tariff (block C and D) there is no compelling argument to provide further investment incentives. Given that effective trade protection for some sectors can be lowering their METR to at or below zero, added income tax incentives are not justified.
4. In the case of non-tradables (block D) any investment tax incentives is likely to be cost-ineffective and unjustifiable. Similarly, income tax incentives by a central government to encourage investment in under developed areas should be avoided. Unless the basic poor investment climate conditions in the under developed region can be improved through direct expenditures on infrastructure, utility supply, etc., any investment tax incentive become cost-ineffective and counterproductive to regional development.

5. Table 2 indicates the case in favor of only using automatic tax incentives delivered through the income tax legislation as the efficient mechanism for delivering any income tax incentive to private sector businesses other than in cases of companies coming under mining, other regulatory or PPP laws and agreements where government agencies are negotiating and approving specific agreements where discretionary expenditures can be used.
6. If income tax investment incentive are to be provided what type should be offered? Broad based CIT rate cuts are cost ineffective as all the existing assets aside from infra-marginal investments get the tax break. Targeted partial or full tax holidays have been relatively popular given their simple advertising message, but they have a poor track record in cost effectiveness and induce significant adverse behaviors and distortions as discussed above. If investment targeted incentives are used, then as discussed above the preferable approach is to use the split or partial expensing system where $x\%$ of the qualifying asset is expensed (or 100% depreciation) and the remaining $(1-x)\%$ gets the regular tax depreciation allowance. This system has a number of advantages: (i) it limits total deductions to the capital amount purchased; (ii) if the depreciation allowance is close to economic depreciation and either inflation adjustments are applied or the inflation rate is zero or low, biases in choice of length of life of assets are avoided; (iii) with an explicit share expensed the incentive level can be varied and, given the share of asset qualifying and the degree of leverage used, the expensing share can be limited to ranges that avoid driving the METR negative; and (iv) tax recapture provisions can be used to recapture the incentive amount of the excess deductions if the qualifying asset is sold. Partial expensing rates in the range of 20% to 50% could be set.¹⁸
7. Two general issues were noted above concerning the impacts of inflation and the treatment of tax losses on the METR should be reviewed and considered for general reforms in the income tax:
 - a. As noted above inflation has a range of impacts on the METR. Ideally, all expect that tax on the nominal working capital can be avoided if inflation adjustments are applied in estimating taxable income. If this is not feasible, and there concerns about the negative impact of the declining value of depreciation allowances caused by inflation when historical costs accounts are used, then this effect can be offset by adding the expected inflation rate to the declining balance depreciation rate set at its economic depreciation rate.^{19,20} For example, if the economic depreciation rate for a class of assets is 6% and the expected inflation rate is 5%, then the tax depreciation allowance rate is 11%. This would be a general reform affecting all types of investment in depreciable assets. Some caution should be applied here before making this adjustment to check whether

¹⁸ Note that with standard investment deductions as offered by many countries where the deduction is in addition to depreciation have to be set significantly lower often in the 10% to 20% range. This type of investment deduction always biases purchases towards shorter lived assets and is harder to judge when the METR goes negative.

¹⁹ Accelerated depreciation rate to offset inflation tax effect is $\delta(1+\pi/r) \cong \delta + \pi$ if $r \cong \delta$

²⁰ If straight line depreciation is used, then an equivalent adjusted length of live of an asset would be the existing length of life adjusted by a factor $\delta/(\delta+\pi)$ where δ is the economic depreciation rate on a declining balance basis and π is the rate of inflation.

existing depreciation rate for tax purposes are already above economic depreciation rates and do not require further acceleration to accommodate inflation effects.²¹

- b. Review the tax loss treatment provisions to ensure that losses can be carried forward at least 5 or preferably up to 7 years and back at least one year and preferably two years.
8. In all cases where private sector investment has to be approved by a government agency, special income tax investment incentives should not be used. As noted above they typically are cost-ineffective and transfer a windfall gain to the private investor. Furthermore given the direct involvement of government in regulated sectors (price regulated utilities or mineral extraction, for example) and PPP agreements (block R in Table 2) or direct expenditure procurement of equipment or construction services (block G), **any assistance to the private investor to guarantee risks or fill a viability gap should be delivered as a direct budget expenditure by the agency** concerned and not as a tax expenditure. If an agency is given powers to award tax incentives then the tax expenditure should be charged against their budget to control the cost. An exception occurs in cases where the government the makes agreements for the private sector to deliver public services in exchange for a tax break. For example, a MNC mining company agrees to provide social services for workers and other at remote location in exchange for a tax break equal to estimated cost of services. These transactions and all tax expenditures should be captured as off budget memo items in a budget.

Table 2. Framework for targeting investment incentives at private business undertaking investment by different modalities in different economic sectors using different incentive modalities

		Modality of investment by private sector	Commercially-driven in private market economy	Regulated and PPP arrangements (including utilities and mining)	Public procurement of equipment and construction services
Sector			Internationally mobile	Location or country specific	
Tradable	Exportable		A	B	F G
	Importable	Duty free or exempt			
Protected			C	D	
Non-tradable				E	
		Investment incentive modality	Automatic Income tax investment incentive feasible	Discretionary public sector direct expenditures only. Tax loss from any discretionary tax break fully charged to budget of agency with discretion.	

²¹ Economic depreciation rates for an economy as a whole are typically about 4% where the assets include all the long-lived infrastructure. The depreciable asset mix of a particular company may be lead to a higher average economic depreciation rate in the range of 6% to 8% when applied to the current market value of the assets.

6. Tax incentive management and role of tax expenditure accounts

Tax expenditure accounts (TEAs) are kept by all OECD countries. This practice of keeping account of all expenditures effectively delivered by special tax provisions through the tax system rather than through direct expenditures started in the late 1960s by the US and then rapidly spread to the OECD countries. Some newer OECD members such as Turkey started TEAs in 2006.²² TEAs for OECD countries are fairly comprehensive covering most major tax types and sector programs supported by special tax provisions.²³ In recent years TEAs have been adopted in a wide range of countries. This is particularly true in a number of Asian economies where rather than a broad coverage the focus has been investment incentives given the extensive and possibly excessive use by many countries particularly in the competition to attract manufacturers and in some cases to attract call centers and back-office service providers. Countries such as Thailand, India and Philippines have established TEAs focused on the investment incentives. The revenue agencies of some countries report the tax losses of tax incentive provision such as Bangladesh reporting on the tax losses from tax holidays. In Sub Saharan Africa a number of countries have produced fairly broad-based reports of TEs including Burundi, Uganda, Gabon, Ghana, Guinea, Rwanda, Senegal, South Africa, and Tanzania. (Some caution has to be noted about some of the TE estimates concerning how they were put together and whether the country had established a formal tax expenditure policy and accounting system (as discussed further below) or whether estimates have been drawn together from various sources.) Total estimated tax expenditures across countries typically fall in the range of 3% to 7% of GDP. TE for income tax investment tax incentives often are in the range of 0.5% to 2% of GDP. Given corporate income tax revenues only form about 2% to 4% of GDP, these CIT losses represents a large share of potential CIT revenues.

6.1. Tax expenditure accounts

The establishment of tax expenditure accounts requires a government to undertake a range of more or less difficult steps depending upon the state of tax administration at the outset.

1. Establish **benchmark tax structures for all tax types** so that deviations from these can be identified as TEs.
2. **Identify tax expenditure provisions** in all types in all laws and classify them into expenditure classes (sector, program, COFOG, region, etc.) as may be useful from a budget management perspective. Note that while in many governments all tax expenditures within a tax type have to be sanctioned within the tax laws (even if they depend upon certain inputs or approvals from other laws), it is the case in some countries that some tax breaks are sanctioned by non-tax laws only. This results in the problem of ensuring their identification and also determining who has the powers to administer them and collect tax and information returns for these provisions.

²² Graham Glenday and Zicheng Li Swift, "Establishing Tax Expenditure Accounts – Towards Better Fiscal Accountability and Transparency", chapter in World Bank, Turkey Public Expenditure Review, December 2006

²³ Hana Polackova Brix, Christian M.A. Valenduc, and Zhicheng Li Swift (editors), *Tax Expenditures—Shedding Light on Government Spending through the Tax System: Lessons from Developed and Transition Economies*, Directions in Development 27583, World Bank 2004

3. Review the **availability of the data in tax returns and other information documents** to ensure the availability of sufficient information to calculate the forgone revenues and the format (hard or soft copies or in databases) and the timing of the data availability. It is not uncommon for countries to have to modify tax returns to include key information about exemptions, deductions, or other modifications to tax bases. The Philippines, for example, redesigned their income tax and corporate income tax returns. In some cases where withholding taxes are collected without final returns being filed, major changes have to be introduced into the return content and filing modalities. Turkey, for example, switched from summary withholding reports to requiring comprehensive e-filing. Note that the timing of the receipt of the data affects when actual TE data can be estimated or actuals reported. For indirect taxes, at least monthly tax returns are typically available, while modern trade tax information systems can almost provide real time information. By contrast for the income tax, final tax returns typically are filed about 3 to 6 months after the end of the financial year and unless they are e-returns, the information availability will be delayed until it is captured in a tax database.
4. The **legal obligations to file tax returns and other related information documents** may need to be changed so that the agencies responsible for collecting and compiling the data have the powers to enforce compliance. The Philippines, for example, recently had to pass special legislation in 2015 to gain the cooperation of all agencies in the compiling of TEA.²⁴
5. The **accounting approach(es)** that will be used has to be agreed. For example, the estimated change in taxes on a cash basis without any behavioral responses or indirect fiscal effects is the most common accounting convention in TEAs. Even then, a common challenge is on how any tax deferral mechanism will be accounted for given that in any year taxes on a cash basis may either lower or higher than without the provision so that a negative TE is possible. Alternatively, accrued annual equivalents or present values of the TE measures could be estimated. Clearly, from a policy perspective, estimates of behavioral and indirect impacts are important and the aggregation of the impacts over time (as is captured in a change in METR calculation for example) is critical, even if these are not fully reported in the TEA.
6. The **fiscal years to be reported in the TEA** need to be determined. TEA are typically published as an annex or in parallel to a budget. Budget estimates are typically announced in year Y before the start of the fiscal years (Y+1 through Y +n) to which the budget will apply and at the same time preliminary outturns for the current year Y and actuals for the prior year (Y-1) will be included. Given the data lags in tax return information particularly for the income tax, the TEA for year Y is generally an estimate and for (Y-1) is preliminary and actuals for year (Y-2). Any TEA for years (Y+1) and beyond have to be based on revenue forecasting techniques.
7. The details of the **format and timing of the publication** of the TEA need to be established. Ideally TEA should be available as an annex to the budget or otherwise published close to the budget date.

²⁴ Government of Philippines, Tax Incentives Management and Transparency Act, 2015

6.2. Roles of TEA in budgeting and fiscal management

1. At a minimum, TEAs provide basic information inputs for all stakeholders in a government's budget and fiscal management. It should provide information of the TEs being made to assist a target group in a parallel fashion to the costs of the direct expenditure programs to the same target group. It should generate the demand to review TEs as to whether they delivering the desired economic benefits and whether they are the most efficient way to deliver the specific benefits or services. Furthermore, when a government is under pressure to find added fiscal resources, it may well turn the TEA accounts to seek items that can scaled back or even cancelled to release the tax revenues for other uses. For example, in Korea since the 2012 election the government has a policy of added service delivery with without increasing tax rates. In part this has been achieved by reviewing TEs each year and reducing or cancelling some while introducing a few as well but with an estimated net revenue increase.
2. The other potential role of TEAs is to help the government make the process for introducing new TEs more transparent and accountable and subject to budget scrutiny in a manner that runs parallel to direct expenditure decision making. A key element in controlling the process for introducing all TEs is to require that all TEs have to be included in the tax legislation of the tax type involved. This is not only critical to the effective administration of the TE by the revenue agencies, but it ensures that the Ministry of Finance is involved in TE decisions along with the sector agencies that will be affected by the new TE program. The joint budget review of the TE also allows the possibility of explicit consideration of whether the TE is a substitute for a direct expenditure program (which should then be cut or scaled back releasing expenditure funds) or whether it is an incremental program cutting government resources for other programs. Ideally governments should have well developed systems for managing their medium term budget process that should include the evaluation and prioritization of the TE program to determine if and when the new program should be added to the government responsibilities. In the context of capital investments, this budget preparation process is contained in the public investment management (PIM) system which determines the process project or program investments go through in development and financial and economic appraisal process along with stage-wise approvals before the investment enters the budget and is implemented.²⁵ This raises the question of how investment tax incentive TE programs are approved (aside from how they are monitored and accounted for as discussed above.) In many, if not most, countries this process has often been delinked and less rigorous than direct capital spending programs. Interestingly, Korea as part of its ongoing review and reform of its TEs, in 2015 introduced the requirement for a "prefeasibility test" to be conducted by specialized research experts before any new TE is legislated. This is in parallel to a long standing and rigorous program used for screening all major capital projects before entering into final design, costing and budgeting. This is achieved by a prefeasibility study being conducted by the Korean Development Institute under which the project

²⁵ Rajaram, Anand; Minh Le, Tuan; Kaiser, Kai; Kim, Jay-Hyung; Frank, Jonas, *The Power of Public Investment Management: Transforming Resources into Assets for Growth*, Directions in development ; public sector governance. Washington, DC ; World Bank Group (Sept 2014)

has to score highly enough in its evaluation before can proceed further. Each government needs to develop systematic and rigorous evaluation and screening procedures before new TEs are introduced. A final important point to note is that while the existence of TEAs may generate the demand to review existing and evaluate and screen all new TEs, the rigorous evaluation and screening of new TEs can be put in place before a TEA system is in place. As noted above, designing and institutionalizing TEA accounts may take a number of years, but in the meantime rigorous evaluation of existing TE-based programs as well gatekeeping the introduction of any new ones is feasible and should be implemented.

Annex A. Average CIT rates for regional groups of countries, 2003-2015²⁶

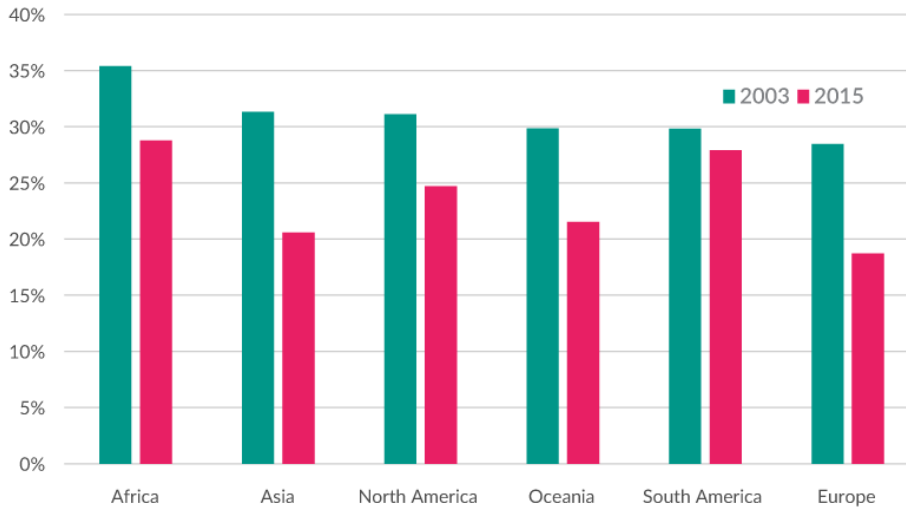
Table A1. Average Top Marginal Corporate Tax Rate by Region or Group in 2015

Region	Average Rate	GDP Weighted Average	Number of Countries
Africa	28.77%	28.08%	33
Asia	20.86%	26.67%	44
Europe	18.70%	26.10%	46
North America	24.71%	37.04%	27
Oceania	21.55%	27.04%	11
South America	27.92%	32.12%	12
G7	30.70%	33.96%	7
OECD	24.99%	31.68%	34
BRICS	28.32%	27.30%	5
EU	22.37%	26.78%	28
G20	28.18%	31.25%	19
World	22.86%	29.75%	173

Figure A1.

²⁶ Results from Kyle Pomerleau, "Corporate Income Tax Rates around the World, 2015," Tax Foundation, Fiscal Fact, No.483 Sept 2015

Top Marginal Corporate Tax Rates Throughout the World Have Declined in the Past Twelve Years



Note: Simple averages used.
Source: Tax Foundation calculations based on data from the World Bank, OECD, and KPMG.

Annex B. Estimation of external tax effects of investment incentives

Two approaches can be taken to estimating the induced external revenues. First, estimates the added tax bases induced by the incremental equity investment, namely, added interest income on debt, added labor income and added products and the taxes arising from these base increases. The second approach uses a simple growth model to estimate the increase in GDP and the related taxes other than the direct taxes already gained on the incremental investment. Hence, the **first or induced tax base approach** is expressed as

$$\Delta I \chi = \Delta I \left[\frac{\Delta D}{\Delta I} i t_i + \frac{\Delta K (r^g + \delta)}{\Delta I} \lambda_L \frac{VAL}{VAK} t_L + \frac{\Delta K}{\Delta I} \lambda_Q \frac{\Delta Y}{\Delta K} t_Q \right] \quad (B.1)$$

where:

- $\Delta D / \Delta I$ = debt-to-equity ratio
- i = interest rate
- t_i = effective tax rate on interest income²⁷
- $\Delta K / \Delta I$ = total investment-to- equity ratio
- $r^g + \delta$ = gross-of-tax rental price of capital²⁸
- λ_L = incrementality factor to recognize labor may be bid away from existing jobs; factor =1 if all incremental jobs, but <1 if a share is bid away from existing jobs
- VAL / VAK = ratio of value added of labor to gross value added of capital
- t_L = effective tax rate on labor income
- λ_Q = incrementality factor to recognize factor constraints may limit incrementality of total product to below 1.
- $\Delta Y / \Delta K$ = incremental increase in GDP per unit increase in capital or the inverse of the incremental capital output ratio
- t_Q = effective indirect tax rate on GDP²⁹

The first term in (B.1) gives the taxes collected on the debt used to finance the incremental total investment (ΔK). The second term captures the taxes on the incremental labor income induced by the incremental investment. Where labor markets are tight (as may be the case with skilled and professional labor) added jobs may result in labor being bid away from existing jobs. While this may reduce the incremental employment, wage rates can be bid up that increase the labor income base. Lower taxes on capital can also result in substitution of capital for labor. Here the share of labor income to capital is taken as constant. The third term estimates the incremental indirect taxes as production is expanded as a result of incremental capital investment. Where the tax incentives cause higher government deficits, particularly if they are delivered through tax deferrals, then the expansionary effects of the investment incentive can be dampened by the crowding out effects of the government competing for capital funds.

²⁷ Effective tax rate on interest income would reflect (i) the costs of mobilizing capital used in investments, (ii) the exemptions available to savers such as through tax free pension and insurance arrangements, (iii) compliance losses and (iv) distribution of the marginal tax rates on savings

²⁸ Note that $K(r^g + \delta)$ = gross value added of capital

²⁹ The indirect tax rate can be estimated as the difference of GDP at market price and factor costs relative to the GDP at market prices

A special variant of the first method would be the externality related to incremental foreign direct investment in an export sector with 100% of the product exported:

$$\Delta I\chi = \Delta I \left[\frac{\Delta D}{\Delta I} (\alpha_D i t_i + (1 - \alpha_D) i t_{nri}) + \frac{\Delta K(r + \delta) VAL}{\Delta I VAK} \lambda_L t_L + \frac{\Delta K}{\Delta I k} FEP(1 - \alpha_M) \right] \quad (B.2)$$

where variables are defined as for (B.1) except for :

α_D = share of debt that is domestic

i = interest rate

t_i = tax rate on domestic debt income

t_{nri} = non-resident interest income withholding tax rate

FEP = foreign exchange premium or the relative excess of the economic exchange rate over the market exchange rate

α_M = share of inputs that are imported

This version of (B.1) recognizes that the financing arrangements may be explicit and that the outputs are exports earning the foreign exchange premium which typically falls in the range of 5% to 10%.

The second or growth-based approach can be estimated as:

$$\Delta I\chi = \Delta I \left[\frac{\Delta K}{\Delta I} \lambda_y \frac{\Delta Y}{\Delta K} t_o \right] = \Delta I \left[\frac{\Delta K}{\Delta I} \lambda_y \frac{t_o}{k} \right] \quad (B.3)$$

where:

λ_y = incrementality factor to recognize factor constraints may limit incrementality of total product to below 1 and possibly also be used to capture the phasing in of output growth

k = incremental capital-output ratio as in a Harrod-Domar growth model

t_o = tax to GDP ratio of all taxes other than direct taxes on equity investment such as corporate income tax

Examples of estimates of the external taxes expressed per unit of equity capital invested (χ) and as a share of the gross-of-tax return to equity (χ/r^e) are given in the table below for a typical developing economy. Assuming full incremental increases in interest and labor income and in production, then estimates of the external taxes per unit of incremental equity investment range are 7.4% by the first approach and 5.8% by the second approach. Relative to a gross-of-tax rate of return to equity of 19%, these are 39% and 30.6%, respectively. These estimates can be taken as upper long-run estimates as they assume full incrementality. From (1), if tax rate dropped from 40% to 30%, then η would need to be more elastic than -1.55 or -1.77, respectively, to be cost-effective in revenue terms. Notice in the case of FDI exporter, however, application of (B2) below raises the externality from 39% to 78%. This implies a lower price elasticity of demand would be required to generate a cost-effective investment with this higher externality. At the same time, the estimates below are upper estimates of the externalities given the full incrementality assumptions used.

Estimates of induced external tax revenues

Method 1: External taxes by induced tax bases

Parameters		Values		Contribution to χ
$\Delta D/\Delta I$ i t_i	30% / 70% =	43% 8% 7.5%	$\frac{\Delta D}{\Delta I} it_i =$	0.3%
$\Delta K/\Delta I$ $r^g + \delta$ λ_L VAL/VAK t_L	100% / 70% = 19% + 4% = 45% / 55% =	1.43 23.00% 1 82% 12%	$\frac{\Delta K(r^g + \delta)}{\Delta I} \lambda_L \frac{VAL}{VAK} t_L =$	3.2%
$\Delta K/\Delta I$ λ_L $\Delta Y/\Delta K = 1/k$ t_Q r^g	100% / 70% = 1/4	1.43 1 25% 11% 19%	$\frac{\Delta K}{\Delta I} \lambda_Q \frac{\Delta Y}{\Delta K} t_Q =$	3.9%
External taxes per unit of equity investment, χ				7.4%
External taxes as a share of gross-of-tax return to equity, χ/r^g				39.0%

Method 1A: External taxes by induced tax bases: FDI in exporter

Parameters		Values		Contribution to χ
$\Delta D/\Delta I$ α_D i t_i $t_{nr i}$	30% / 70% =	43% 30% 8% 7.5% 10.0%	$\frac{\Delta D}{\Delta I} (\alpha_D it_i + (1 - \alpha_D) it_{nr i}) =$	3.1%
$\Delta K/\Delta I$ $r^g + \delta$ λ_L VAL/VAK t_L	100% / 70% = 19% + 4% = 45% / 55% =	1.43 23.00% 1 82% 12%	$\frac{\Delta K(r^g + \delta)}{\Delta I} \lambda_L \frac{VAL}{VAK} t_L =$	3.2%
$\Delta K/\Delta I$ λ_Q $\Delta Y/\Delta K = 1/k$ FEP a_M r^g	100% / 70% = 1/4	1.43 1 25% 9% 40% 19%	$\frac{\Delta K}{\Delta I} \lambda_Q FEP (1 - \alpha_M)$	8.6%
External taxes per unit of equity investment, χ				14.9%
External taxes as a share of gross-of-tax return to equity, χ/r^g				78.3%

Method 2: External taxes from induced growth

Parameters		Values		Contribution to χ
$\Delta K/\Delta I$		1.43		
λ_Y		1		
t_O		16.3%	$\frac{\Delta K}{\Delta I} \lambda_Y \frac{t_O}{k} =$	5.8%
k		4		
r^g		19%		
External taxes per unit of equity investment, χ				5.8%
External taxes as a share of gross-of-tax return to equity, χ/r^g				30.6%

Annex C. Price elasticity of demand for investment capital based on micro economic relationships

An alternative approach to estimating the price elasticity of demand for capital investment (η_{Kr}) is from the relationships of the derived demand for capital of profit maximizing businesses in competitive markets. Basic profit maximizing theory has been used to derive the price elasticity of demand relative to the following parameters of producers using labor and capital as the factors of production.

η_{Qp}	Elasticity of demand for the quantity of output produced relative to the product price
σ_{KL}	Elasticity of substitution of labor for capital
α_K	Share of value added accruing to capital
ε_{Lw}	Elasticity of supply of labor relative to the wage rate

The derived price elasticity of demand is found to be³⁰

$$\eta_{Kr} = \frac{\sigma_{KL}(\eta_{Qp} - \varepsilon_{Lw}) + \varepsilon_{Lw}(\eta_{Qp} + \sigma_{KL})\alpha_K}{(-\eta_{Qp} + \varepsilon_{Lw}) + (\eta_{Qp} + \sigma_{KL})\alpha_K} \quad (C.1)$$

This relationship has a number of special cases, namely

<p>if $\varepsilon_{Lw} = \infty$ or wage rate are fixed, then</p>	$\eta_{Kr} = \alpha_K \eta_{Qp} - (1 - \alpha_K) \sigma_{KL}$
$\varepsilon_{Lw} = 0$	$\frac{1}{\eta_{Kr}} = \frac{\alpha_K}{\eta_{Qp}} - \frac{1 - \alpha_K}{\sigma_{KL}}$
$-\eta_{Qp} = \sigma_{KL}$	$\eta_{Kr} = -\sigma_{KL} = \eta_{Qp}$
$\sigma_{KL} = 0$	$\eta_{Kr} = \frac{+\varepsilon_{Lw}\eta_{Qp}\alpha_K}{-\eta_{Qp}(1 - \alpha_K) + \varepsilon_{Lw}}$

From the relationships above the price elasticity of demand for capital depend primarily on the price elasticity of demand for the product and the elasticity of substitution between labor and capital. Generally when looking at the price elasticity of demand for large aggregates of output, this value is expected to converge on one (negative) as the aggregation of goods expands out to the full expenditure budget. Hence, in the case of full private sector production, it is expected that the price elasticity of demand is close to -1. In addition, the elasticity of substitution of labor for capital is expected to be less than one.

³⁰ J. Hicks, The Theory of Wages (1963)

Table C.1 below gives the sensitivity of the price elasticity of demand for capital relative to a range of parameter values in relationship (C.1). The results below show that unless one or both of the price elasticity of demand for output and the substitution elasticity between labor and capital have magnitudes above unity, then the expected price elasticity of demand for capital fall at or below unity in magnitude. In sectors where the price elasticity of demand is high then the price elasticity of demand for capital rises. For example, if $\eta_{Qp} = -5$, then $\eta_{Kr} = -2$ as illustrated below.

η_{Qp}	-1	-1	-1	-1	-1	-1	-1.25	-1.25	-1.25	-5
σ_{KL}	1	0.75	1.25	0.75	0.75	0.75	1	0.5	0.5	1
α_K	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
ϵ_{Lw}	1	1	1	0.5	0	100	1	1	0	0.5
η_{Kr}	-1.00	-0.88	-1.11	-0.88	-0.87	-0.89	-1.13	-0.84	-0.75	-2.00

Annex D Surveys of investment incentive impacts on investment decisions

Author	Focus of survey	Conclusion	Did incentives influence Investment level? (share saying yes)
Investment Climate Advisory (FIAS)—investor motivation surveys	Burundi (2011)	Redundancy ratio for incentives (Would have invested even if Incentives were not provided)	77%
	Guinea (2012)		92%
	Jordan (2009)		70%
	Kenya (2012)		61%
	Nicaragua (2009)		15% (51% for non-exporting firms outside free zones)
	Rwanda (2011)		98%
	Serbia (2009)		71%
	Tanzania (2011)		91%
	Tunisia (2012)		58%
	Uganda (2011)		93%
FIAS	Vietnam (2004)		85%
FIAS	Thailand (1999)		81%
Nathan Associates	Mozambique (2009)		78%
Guisinger and Associates (1985)	Investment incentives and performance requirements for export-oriented firms		33%
Reuber (1973)	FDI and market orientation		52% for export-oriented firms
Mckinsey—MNC investment in developing economies (2003)	Business process outsourcing (BPO) and automobile sectors in India (2003)	Incentives not among top 3 factors driving location decisions	
Fortune/Deloitte and Touche (1997)	Business location study	Taxes ranked 13th of 26 factors in importance for investments	
G-30 (1984)	Study of 52 multinational corporations covering half of world's FDI stock	Incentives ranked 7th in importance for investments	

Survey results compiled by Sebastian James, International Finance Corporation.