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## Japan's Corporate Income Tax: Facts, Issues and Reform Options

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**IMF Working Paper**

Asia and Pacific Department and Fiscal Affairs Department

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**Abstract**

This paper explores how corporate income tax reform can help Japan increase investment and boost potential growth. Using international and Japan-specific empirical estimates of corporate tax elasticities, investment is predicted to expand by around 0.4 percent for each point of rate reduction. International consensus estimates suggest further that between 10 and 30 percent of the static revenue loss could be recovered in the long run through dynamic scoring, although Japan's offset may be closer to the lower bound. Compensating fiscal measures are necessary in light of Japan's tight fiscal constraints. The scope for base broadening in the corporate income tax is found to be limited and some forms of base broadening will undo positive investment effects of a rate cut. Alternative revenue sources include higher consumption and property taxes. A gradual approach toward lowering tax rates mitigates windfall gains and reduces short-run revenue costs. An incremental allowance-for-corporate-equity system could boost investment with limited fiscal costs in the short run.

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## I. INTRODUCTION

In recent years, Japan has reformed its corporate income tax (CIT). Yet, the statutory CIT rate remains among the highest in the OECD and Asia. Moreover, several structural weaknesses still characterize today's CIT system in Japan. To stimulate the economy and attract more investment to the country, the Japanese government announced its intention to reduce the statutory CIT rate to below 30 percent in its revised growth strategy in June 2014. Currently, it is also examining other CIT reform options to address structural weaknesses. But how costly would a rate cut be? And how should it be financed? And what reforms would best address the specific economic challenges of Japan?

Several circumstances make CIT reform in Japan different from that in other countries. First, deflation has induced Japanese corporations to repay their debt and build up significant cash reserves through retained earnings. CIT reform could help unlock this cash in the short run by encouraging investment, raising wages, and breaking the spiral that leads to deflation. Second, in the medium term, a key challenge for Japan is to strengthen the growth potential of the economy at a time when ageing is rapidly progressing. By eliminating distortions and attracting investment, CIT reform could provide an offsetting mechanism. Third, CIT reform needs to be designed under tight fiscal constraints. Indeed, Japan's extraordinary high level of public debt requires a significant effort of consolidation in the short and medium-term, which may run counter to cuts in the CIT.

This paper contributes to the debate on CIT reform in three ways. First, it identifies the key structural weaknesses in Japan's CIT. This provides guidance for a medium-term reform agenda aimed to eliminate distortions. Second, the paper assesses the economic and fiscal impact of a CIT rate cut in Japan. It updates and expands an earlier analysis of Dalsgaard (2008), thereby paying more attention to the quantitative effects of a CIT rate reduction. The analysis suggests that CIT rate reduction will probably bring important economic benefits to Japan, such as more investment and higher wages, but these are insufficient to make the rate cut self-financing. Finally, the paper discusses options for wider tax reform in light of Japan's tight fiscal constraints. Three alternatives are presented. The first is a CIT rate cut financed by other fiscal measures outside the CIT. Second, the government could seek base-broadening measures within the CIT. Third, a more cost-effective CIT reform to eliminate the main distortions is by introducing an allowance-for-corporate-equity (ACE), which has recently gained traction in several countries and which has particular merit for Japan.

The rest of this paper is organized as follows. Section II discusses the current CIT structure in Japan and its distortions. Section III elaborates on the likely impact of a CIT rate cut on investment and growth in the medium term. Section IV explores the fiscal impact of CIT reform, using estimates for the elasticity of corporate taxable income. It appears that a CIT rate cut is unlikely to be self-financing, which calls for a discussion of compensating measures. Section V discusses wider options for reform, such as a shift in the tax mix, options for base broadening, and the ACE. Section VI concludes.

## II. JAPAN'S CORPORATE INCOME TAX DISTORTIONS

### A. High Statutory Tax Rate(s)

Most countries apply a single CIT rate on all corporate income. The Japanese CIT rate varies by firm size, income level and region (due to various local taxes), leading to a complex system of differing rates (Table 1). The overall CIT burden—adjusted for the deductibility of the local enterprise taxes and after the repeal of the special reconstruction tax in April 2014—ranges from 21 percent (for income of up to ¥4 million earned by small corporations located in an area applying the standard local tax rate) to almost 36.3 percent (for small corporations with income over ¥25 million in the Tokyo area). Large corporations with capital over ¥100 million—approximately 1 percent of all corporations in Japan—face an overall CIT rate of around 35.6 percent in the Tokyo area and 34.5 in areas applying the standard local rate. In addition, they face a local tax of 0.48 percent of annual value added (including profits, wages, and interest) and 0.2 percent of capital, even when they record losses.

**Table 1. Statutory Corporate Income Tax Rate in Japan, as of April 2014<sup>1</sup>**

<i>Taxable income</i>	Small corporations /2			Large corporations /2		
	< 4 mln	<4,8 mln>	> 8 mln	< 4 mln	<4, 8 mln>	> 8 mln
<b>Corporate income tax</b>						
Central government tax /3		19.0	25.5		25.5	
<b>Corporate inhabitants tax</b>						
- Prefectural (standard) /4		0.8	1.3		1.3	
- Municipal (standard) /5		1.8	3.1		3.1	
<b>Enterprise tax</b>						
- Prefectural	2.7	4.0	5.3	1.5	2.2	2.9
- Special local tax /6	2.2	3.2	4.3	2.2	3.3	4.3
Total CIT rate (standard)	22.5	24.8	39.5	33.6	35.4	37.1
Adjusted rate (standard) /7	21.4	23.2	36.0	32.4	33.5	34.6
Adjusted rate (Tokyo)	22.1	23.9	37.1	33.4	34.5	35.6

/1 Exclusive of the prefectural and municipal per capita levies (ranging between ¥70 thousand and ¥3.8 million, depending on capital and number of employees); also exclusive of enterprise tax levied on value added (between 0.48 percent and 0.576 percent) and on capital (between 0.2 and 0.24 percent) of large companies.

/2 Small corporations are those with capital up to but not exceeding ¥100 million. Large corporations are above that. The CIT rate for small corporations by the central government is temporarily reduced to 15 percent and will become 19 percent per January 2015.

/3 A special reconstruction tax was repealed on April 1, 2014. Between April 2012 and March 2014, this tax was 10 percent of the central CIT.

/4 Standard rate 5 percent of the central tax; the maximum rate of 6 percent is levied in Tokyo metropolitan.

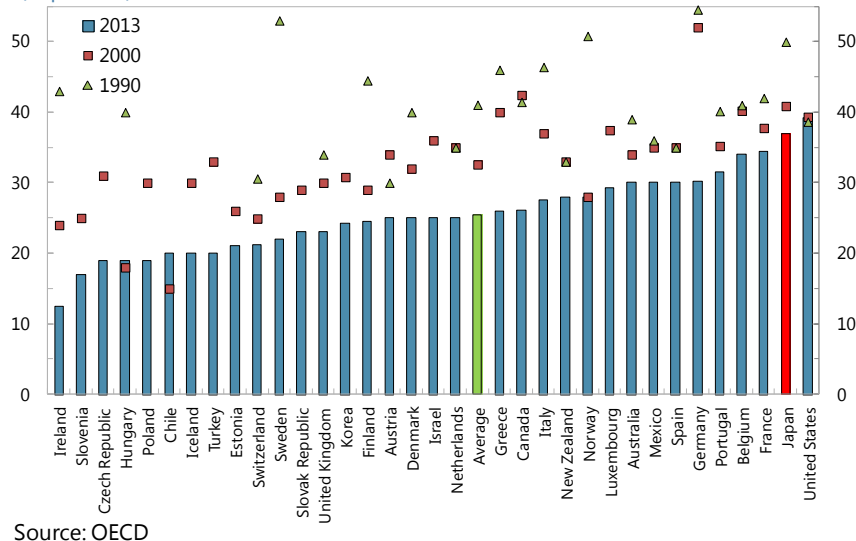
/5 Standard rate 12.3 percent of the central tax; the maximum rate of 14.7 percent is levied in Tokyo metropolitan.

/6 The special local tax is 81 percent of the prefectural enterprise tax for corporations; for large corporations, the rate is 148 percent of the prefectural enterprise tax.

/7 Enterprise taxes are deductible in determining the base of other taxes and the enterprise tax itself. The adjusted rate is equal to the total CIT divided by 1 plus the enterprise taxes.

CIT rates in Japan have gradually fallen over time but are still high internationally. Before 1990, rates were around 50 percent; they then declined to 40 percent by 2012. Since April 2014, the rate is around 35 percent for larger companies. This is still higher than the OECD average of 25.5 percent. It is also higher than the average of 25 percent in a group of 11 Asian countries.<sup>2</sup> Note, however, that large countries generally have higher CIT rates than small countries. For instance, the G7 (excluding Japan) average CIT rate in 2013 is slightly above 30 percent (Figure 1). The US has an overall CIT rate of 39 percent (for an average US State). That large countries set higher tax rates than small countries is common in tax competition games, as large countries have more to lose and less to gain from undercutting their neighbor's tax rates when competing for tax bases (see e.g. Keen and Konrad, 2013). Moreover, due to a large domestic market, large countries can generally impose higher taxes on agglomeration rents arising from increasing returns to scale (Baldwin and Krugman, 2004).

**Figure 1. Statutory General Government CIT Rates**  
(In percent)



Source: OECD

## B. High Effective Tax Rates

Investment distortions do not depend on statutory CIT rates, but on effective tax rates. Neoclassical investment theory, for instance, suggests that investment projects continue to be undertaken until (under decreasing returns to scale) the project that just breaks even. The price at this point is the user cost of capital, which depends not only on the CIT rate, but also on elements of the tax base, such as depreciation allowances, inventory valuation, interest deductibility and investment tax credits. The marginal effective tax rate (METR) is derived directly from the user cost of capital and measures the tax burden imposed on the marginal

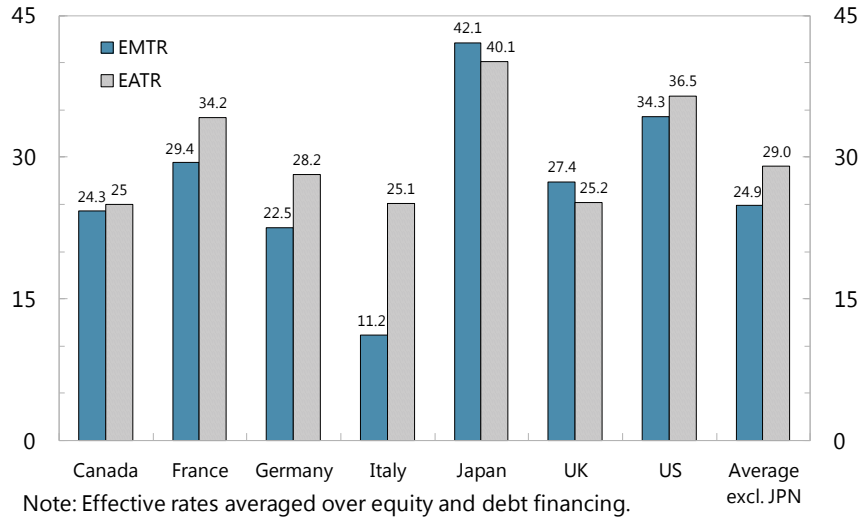
<sup>2</sup> Unweighted average for 2014 of China, Hong Kong, India, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Thailand, and Vietnam.

investment. Thus, a higher METR means that fewer investment projects meet the required rate of return and that investment will be lower. METRs can be calculated for different types of investment (buildings, equipment, intangibles) and alternative sources of finance (debt, retained earnings, new equity).

International comparisons of the weighted average of these METR's in 2012 suggest that Japan imposes relatively large marginal investment distortions through its CIT system (Figure 2). Indeed, not only is the CIT rate high, also depreciation schemes in Japan are less generous than in most other countries (Figure 3).

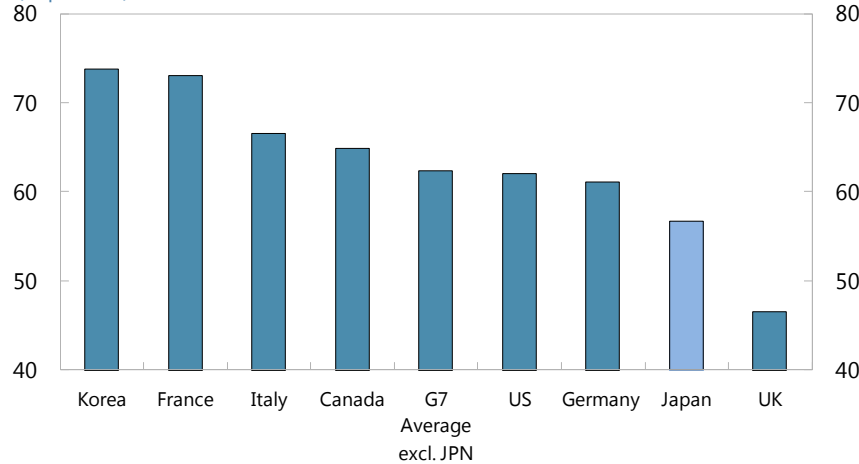
**Figure 2. Effective Marginal and Average Corporate Tax Rate, 2012**

(In percent)



**Figure 3. Net Present Value of Depreciation, 2012**

(In percent)





The finding of a high METR in Japan needs to be qualified though. First, low interest rates and low inflation in Japan reduce the METR relative to other countries. For example, higher inflation rates prevalent in other countries reduce the real value of depreciation allowances by more than they do in Japan. Such effects are not captured in the international comparisons of METRs, which are based on uniform parameters between countries (see e.g. Suzuki, 2010). Of course, if inflation and interest rates would converge to those in other countries, this qualification would no longer apply. Second, as emphasized by Suzuki (2014), not all METRs are high in Japan. For example, the METR for machinery is found to be lower than in India, China and Indonesia. Depreciation for buildings and intangibles is relatively less generous though. Finally, changes since 2012 have modified Japan's METR. For instance, the lower CIT rate and a special (immediate) depreciation of qualifying investment have reduced the METR; yet, the reduction of declining-balance depreciation from 250 to 200 percent of depreciation under the straight-line method has had an opposite effect.

Investment distortions of the CIT can also be inframarginal, e.g. if it affects the location choice of multinational corporations (MNCs) or investment by firms facing credit constraints. In these cases, not the METR but the average effective tax rate (AETR) matters, i.e. the average tax burden on a typical, profitable investment project.<sup>3</sup> The AETR in Japan is also high compared to other countries (Figure 2), suggesting relatively large distortions in inframarginal investment choices.

### **C. Significant Debt Bias**

CIT systems often impose distortions in corporate financial decisions. The deductibility of interest payments but not, in general, of payments to equity against CIT implies a tax incentive for corporations to use debt rather than equity finance. This distortion is illustrated by the difference in the cost of capital for equity versus debt. For Japan, this is the highest among the G7 countries (Figure 4). In principle, this distortion at the corporate level can be offset by taxes at the personal level, e.g. if personal income taxes (PIT) on interest are higher than on dividends and capital gains. Japan, however, applies uniform rates to dividends (from listed firms), interest and capital gains so that the PIT does not mitigate debt bias for domestic Japanese investors.

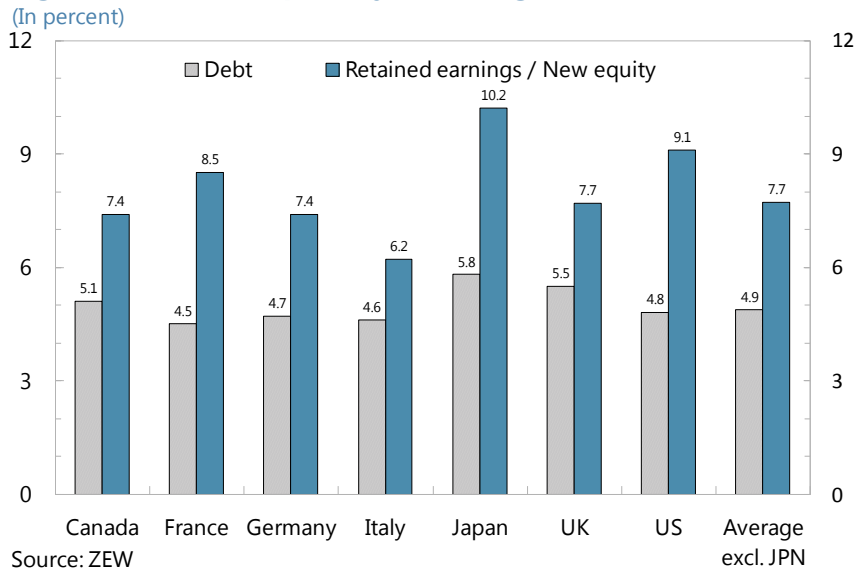
Several studies have estimated the size of debt bias. A consensus estimate obtained from a meta analysis by De Mooij (2011) suggests that a 10 percentage-point higher CIT rate increases the ratio of debt to assets in a firm by, on average, between 2 and 3 percent. For Japan, Kunieda, Takahata and Yada (2011) find smaller effects, somewhere between 1 and

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<sup>3</sup> The AETR can be calculated as a weighted average of the METR and the statutory CIT rate, with weights determined by the profitability of the assumed project.

2 percent.<sup>4</sup> Recently, many Japanese firms have significantly reduced their leverage ratios by paying back their debt and accumulate cash reserves. Thus, debt bias might not be an immediate concern. However, it could become a structural weakness of the CIT system once the Japanese economy achieves stable growth with moderate inflation.<sup>5</sup>

**Figure 4. Cost of Capital by Financing Measure, 2012**



#### D. Arbitrage and Distortion for SMEs

The classic function of the CIT is to serve as a backstop for the PIT. Indeed, if business income would be taxed by less than wage income, people will have an incentive to supply their labor effort through a small business in the corporate form and the owner-directors would distribute income as capital income.<sup>6</sup> The CIT can help create neutrality in the taxation of business income. In Japan, business income from unincorporated small and medium-sized enterprises (SMEs) is taxed under the progressive PIT, with rates ranging from 5 to 45 percent. On top of these, a local income tax rate of 10 percent (4 percent for prefectural inhabitant tax and 6 percent for municipal inhabitant tax) and an enterprise tax between 3 and 5 percent (depending on the type of business or profession) are levied.<sup>7</sup> Income earned by

<sup>4</sup> This might be due to the large number of loss-making firms in Japan, for whom the tax savings from debt finance are obviously smaller (see below).

<sup>5</sup> For an assessment of the welfare costs associated with debt bias, see e.g. IMF (2009) and De Mooij (2012).

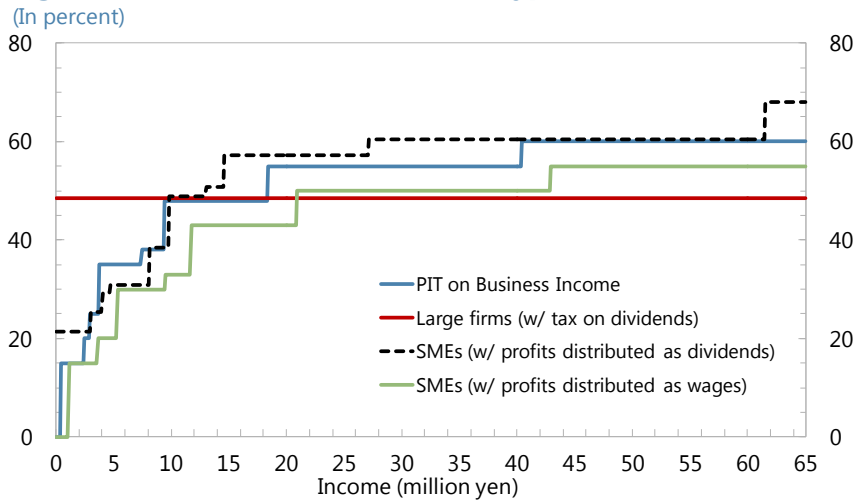
<sup>6</sup> Evidence for US and Europe points to significant shifts in businesses legal form due to tax differences between corporate and noncorporate businesses, see Goolsbee (2004) and De Mooij and Nicodeme (2008). In the US, SMEs can operate as S-corp under which they enjoy limited liability status, but the owners are taxed at the PIT.

<sup>7</sup> The self-employed are also subject to social contributions (SC) for national pensions (with a fixed premium of ¥15,250 per month in 2014) and national health insurance (the rate of which depends on the municipality). For owner-directors of closely held corporations, SC is levied as a percentage of salary income. If there is a strong

(continued...)

closely held corporations is subject to CIT and, when distributed, dividend tax.<sup>8</sup> The owner-director of a closely held corporate business can pay a director's remuneration, which is taxed as wage income. There are no special rules regarding this remuneration, leaving scope for arbitrage between labor and capital income.

**Figure 5. Tax Burden for Different Types of SMEs**



Note: SME rates pertain to non-listed Tokyo firms with income upto 25 million yen. PIT rates exclude special 2013-2037 reconstruction tax of 2.1% of tax obligations. An additional 5% local tax is assumed.  
Source: IMF staff estimates

Figure 5 compares the overall marginal tax burden for an SME in Japan for three situations: (i) a non-incorporated business subject to the PIT (blue line); (ii) an incorporated business that pays all its after-tax profits as dividends, thus being subject first to CIT on corporate profits and then PIT on distributions (dotted black line); and (iii) an incorporated business that distributes all profits in the form of a director's remuneration to its owner, which is subject to the PIT (and CIT becomes zero) (green line). We see that the marginal tax is lower for the third entrepreneur than for the other two, at all income levels. The difference can be as large as 18 percent for incomes between ¥8 and ¥12 million. One important reason for this difference is a large wage income deduction in the Japanese PIT.<sup>9</sup> It encourages businesses in Japan to incorporate and then allocate their profits in the form of a director's wage

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actuarial link between these contributions and entitlements, an entrepreneur might be indifferent between receiving labor or capital income. However, the weaker the actuarial link, the more SC rates act like ordinary taxes and the more attractive becomes receiving capital income, rather than labor income. SCs are ignored in the analysis here.

<sup>8</sup> For dividends paid by non-listed firms, the ordinary progressive PIT schedule applies. Dividends on shares of listed companies face a 20 percent withholding tax. A special tax of 10 to 30 percent is levied on retained earnings of large closely-held corporations, depending on the size of these earnings.

<sup>9</sup> Wage earners can choose to either deduct actual expenses related to work or a standard deduction that is based on a formula related to income. Few taxpayers opt for actual expenses in light of the high standard deduction—which is much higher than in other countries. The deduction cannot be applied to dividend income and is also higher than the actual work-related expenses incurred by sole proprietorships.

remuneration. Tajika and Yashio (2005) indeed find large distortions in the payout decision in Japanese SMEs.<sup>10</sup>

### **E. Arbitrage and Distortion for Multinationals**

Before 2009, Japan taxed foreign source income of its resident companies on a worldwide basis, but with deferral for retained profits by the foreign subsidiary.<sup>11</sup> When dividends were paid, the Japanese parent was liable to pay a repatriation tax, with a credit granted for the foreign taxes already paid (so that the repatriation tax was equal to the difference between the Japanese and the foreign tax rate). In 2009, Japan moved toward an exemption system for dividends, consistent with territorial taxation.<sup>12</sup> In particular, 95 percent of the foreign dividends received by the Japanese parent are now exempt if the ownership in the foreign company is at least 25 percent. If these conditions are not met—and also for other forms of foreign source income, such as royalties, interest, foreign branch income, and capital gains—the foreign tax credit system still applies.

One might expect the abolition of the repatriation tax on dividends in Japan to have encouraged foreign subsidiaries to distribute more profits. Hasegawa and Kiyota (2013) indeed find that Japanese affiliates abroad that paid dividends before 2009 increased their profit repatriations to Japanese parents after the reform. Firms that did not pay dividends, however, seem not to have changed their behavior. The dividend exemption system also improved the Japanese competitiveness in bidding for foreign companies. Feld et al. (2013) find that the reform increased the number of acquisitions abroad by 31.9 percent. Despite these advantages, however, the reform may have incurred some costs in terms of revenue foregone from repatriation taxes. Moreover, the reform has made foreign tax rates more important for Japanese parents (these are now final taxes), which risks amplifying income shifting to low-tax locations—e.g. through the manipulation of transfer prices, debt shifting or relocation of intangible assets (see e.g. IMF, 2014). The 2009 reform might thus have made it more difficult for Japan to sustain its high CIT rate, due to the increased risk of base erosion.

Japan has also strengthened its anti-avoidance measures in recent years to limit profit shifting by MNCs. For instance, since 2010 it requires stricter documentation by companies regarding the transfer prices they use vis-à-vis foreign related parties. This aims to ensure compatibility with the arms-length principle. Thin-capitalization rules—in place since 1992—were

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<sup>10</sup> They find no discernible impact on the incorporation decision, however, unlike studies for the US and Europe.

<sup>11</sup> If retentions were subject to CFC rules, deferral was denied and income immediately subject to tax.

<sup>12</sup> Worldwide taxation is applied in the US, China and India. Territorial taxation is applied in most European countries, including by the UK since 2009. The distinction between the two systems is not black and white, however, as territorial countries generally apply strict rules to the application of exemptions and worldwide countries generally allow for deferral.

complemented in 2012 by an earnings-stripping rule that denies deductions for net interest paid to related parties when it exceeds 50 percent of income. In 2010, Japan also reformed its anti tax-haven regime through controlled foreign corporation (CFC) rules. Through the reform, passive income (such as income from financial investment) of a foreign affiliate residing in a low-tax jurisdiction (defined as having an effective tax rate of 20 percent or lower) became subject to current taxation in Japan. This applies in cases where more than 10 percent of its share is owned directly or indirectly by a Japanese firm or an individual resident, even if the foreign affiliate qualifies for exemption from application of the CFC rule.

## **F. Revenue Performance**

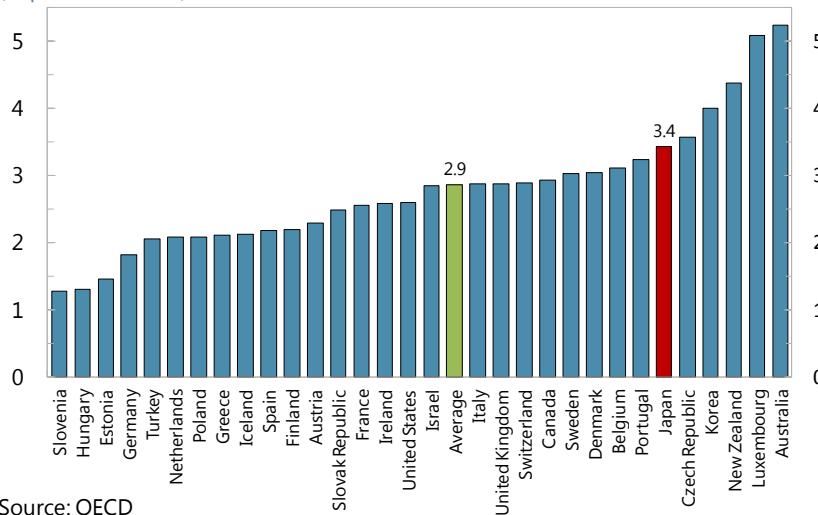
Between 2008 and 2012, Japan's CIT revenue-to-GDP ratio was 3.3 percent on average. This is higher than the OECD average of 3 percent and also higher than the other G7 countries' average of 2.6 percent (Figure 6).

The CIT revenue-to-GDP ratio has been quite volatile though. For instance, at the central government level the ratio was 2.9 percent in 2006, but declined to 1.3 percent in 2009 (without significant reforms). Ueda, Ishikawa, and Tsutsui (2010) estimate that the structural CIT revenue to GDP ratio in 2010 is 2.4 percent. At a central government statutory rate at that time of 30 percent, revenue productivity—measured as CIT revenue in percent of GDP divided by the CIT rate—is 0.08, i.e. each percentage-point CIT rate generates around 0.08 percent of GDP in structural revenue terms. In today's terms, this is approximately ¥400 billion.

The lion's share of CIT revenue is generated by a small number of firms. Approximately 1 percent of all corporations (24,000 out of 2.45 million) have capital exceeding ¥100 million. They paid approximately 65 percent of total CIT in FY2012.

**Figure 6. CIT Revenue in OECD Countries, 2012**

(In percent of GDP)



Source: OECD

Note: Chile and Mexico data unavailable. Norway excluded (10.4%).

### III. ECONOMIC BENEFITS OF A CORPORATE TAX RATE REDUCTION

The main purpose of a CIT rate cut, as envisaged by the Japanese government, is to strengthen the economy by increasing investment. This section assesses such effects and their likely magnitude, based on a review of international and Japanese evidence. The analysis considers only the effects of a lower CIT rate, not of measures to offset its revenue impact—an issue picked up in section V. However, some of the studies discussed below explore a revenue-neutral tax reform and, where this is the case, we will explicitly mention it. Effects of a lower CIT rate on tax arbitrage, such as income shifting by MNCs or SMEs, will be discussed in the next section where the fiscal impact of a reduction in the CIT rate is explored.

#### A. Aggregate Growth Effects

Several empirical studies suggest that the CIT is relatively distortionary for economic growth. For instance, Lee and Gordon (2005) exploit a panel of 70 countries between 1980 and 1997 to assess the growth effect of different taxes. They find that a 10 percentage-point lower CIT rate will, on average, raise the annual growth rate of GDP by between 0.6 and 1.1 percent; for other taxes, they find no significant growth effect. Mertens and Ravn (2013) use post-war tax changes in the US and also find strong growth effects: a 10 percentage-point lower CIT rate raises real GDP per capita after one year by 6 percent. In contrast to Lee and Gordon (2005), however, they find that the effect of a PIT rate change is even larger. Arnold et al. (2011) exploit a panel of 21 OECD countries between 1970 and 2005 to assess the growth effects of various taxes. They report a ‘growth-ranking’: the most growth-friendly is the property tax, followed by the consumption tax, the labor tax and then finally the CIT. In quantitative terms, the study estimates that a shift of 1 percent of total tax revenue (approximately  $\frac{1}{3}$  of a percent of GDP) from the CIT towards a combination of consumption

and property taxes increases GDP in the long run by 2 percent. Recently, Japan Center for Economic Research (2014) estimated that a 10 percent reduction in the Japanese CIT rate would boost economic growth by 0.5 percent annually.

These results, however, are highly contentious. In estimating the impact of tax variables on economic growth, for instance, Easterly and Rebelo (1993) find no significant effects, but note the difficulty of measuring tax variables and isolating tax effects empirically. Mendoza, Milesi-Ferretti, and Asea (1997) exploit a panel of 18 OECD countries between 1965 and 1991 and find no significant impact of labor and capital income taxes on economic growth. More recently, Xing (2012) challenged the growth ranking of tax instruments, as reported by Arnold et al. (2011). Indeed, the ranking appears not robust to different specifications (except for the property tax, which always ranks best). For instance, the long-run growth effect of a shift from the CIT toward consumption taxes by 1 percent of total tax revenues, ranges from +1.8 percent to -0.3 percent in various regressions, with an overall average effect across regressions of 0.7 percent. Also Acosta-Ormaechea and Yoo (2012) find for a panel of 69 countries between 1970 and 2009 that the CIT is not more harmful to growth than the PIT. Moreover, they report that a shift in the tax mix of 1 percent of GDP from income taxes to consumption taxes raises the annual growth rate by only 0.1 percent.

An alternative way to assess the economic impact of changes in the tax mix is by using macroeconomic models. For instance, the Cabinet Office (CAO) of Japan has used its Economic and Fiscal Model to assess the impact of corporate tax reform in Japan. CAO (2010) estimates that a reduction in the CIT burden by 1 percent of GDP (allowing a reduction by approximately 12 percentage points) will raise GDP over a period of 5 years by 1 percent compared to the baseline.<sup>13</sup> Using IMF's GIMF model, Keen et al. (2011) find a similar effect of a CIT rate cut. However, an equivalent shock in the consumption tax reduces GDP by a little less than half of that so that a revenue-neutral shift away from the CIT would raise GDP in the long run by approximately ½ percent.<sup>14</sup>

Overall, we may conclude that studies on the macroeconomic impact of CIT cuts require cautious interpretation, especially as a guide to policy. Cross-country panel regressions, for instance, are prone to measurement problems and suffer from econometric pitfalls such as endogeneity and reverse causality. Moreover, there is little consensus as to quantitative growth effect of tax reform, and even growth rankings are contentious. This may also indicate that the CIT is perhaps not as harmful for growth in all countries, e.g. where it falls largely on economic rents due to the presence of natural resources or in large agglomerations.

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<sup>13</sup> The study looks at an increase in the tax burden. We assume that the effect of a tax reduction is symmetric and thus of the same size but of opposite sign.

<sup>14</sup> Short-run growth effects can be markedly different from long-run growth effects. For instance, international evidence suggests that the VAT and the PIT have considerably stronger short-term growth effects than the CIT (IMF, 2013). A shift from CIT to VAT may thus support economic growth in the long-run, but at a cost of slower short-term growth.

Moreover, macro studies often cannot shed light on issues of tax design. Macroeconomic models, for instance, often rely on a single tax parameter to capture the system. The design of the CIT, however, matters a great deal according to theory. For instance, the CIT has probably very different effects on growth if it does not affect marginal incentives to invest—such as under an ACE system discussed below. To better understand those effects, the next section demonstrates how the CIT may affect investment through different channels.

## **B. Effects on Investment**

While there is considerable uncertainty regarding the magnitude of the aggregate growth effects of a CIT cut, there is a greater consensus on how (much) a CIT rate cut affects investment—one of the main drivers of the growth effect. A reduction in the CIT rate affects investment through at least three channels: (i) by lowering the user-cost-of-capital, it can stimulate investment at the margin; (ii) for firms that are credit constrained, it can raise investment by increasing their cash-flow; and (iii) by lowering the average tax burden, it may attract foreign direct investment (FDI).

### **Investment at the Margin**

A large empirical literature has estimated investment equations with the user-cost-of-capital, most notably for the US. Hassett and Hubbard (2002) summarize these findings and arrive at consensus elasticity between  $-\frac{1}{2}$  and  $-1$ , i.e. a reduction in the cost of capital by 1 percent boosts investment by between 0.5 and 1 percent. More recently, Arnold et al. (2011) run panel regressions of an investment equation for OECD countries. They find that a reduction in the CIT rate from 35 to 30 percent will reduce the user cost of capital by 2.8 percent and increase investment by 1.9 percent (consistent with an elasticity of  $\frac{2}{3}$ ). Using industry-level data, Vartia (2008) finds that a similar reduction in the CIT rate boosts investment by between 1 and 2.6 percent in different industries, suggesting an investment elasticity to the user cost of capital between  $\frac{1}{3}$  and 1. The elasticity of investment is also closely related to the elasticity of substitution between labor and capital. Reviewing the empirical literature on this parameter, Chirinko (2002) reports that a value of between 0.3 and 0.4 is a good reflection of findings. This is consistent with a cost-of-capital elasticity of approximately  $-\frac{1}{2}$ .

For Japan, Tachibanaki (1997) reports that estimated elasticities are generally (much) smaller than those found in the international literature. Also Uemura and Maekawa (2000) find that the CIT rate cut in 1999 increased investment in Japan by only 0.2 percent per 1 percentage point cut in the CIT rate, i.e. smaller than in studies for other countries. Uemura (2004) updates this study, using data after the burst of the bubble economy in the early 2000s. He finds that the explanatory power of tax-adjusted q-term is statistically insignificant for most industries. Also adding tax variables to an investment equation for Japan adopted in Kang (2014) yields hardly any statistically significant effect on investment. Hence, there are strong empirical indications that a CIT rate reduction in Japan will exert a smaller effect on investment through the cost-of-capital channel than elsewhere.



Box 1 employs a simple static general equilibrium model—which includes interactions with the labor market to capture impacts of investment on labor productivity, wages and employment—to simulate the economic impact of a CIT rate cut in Japan by 5 percentage points (not revenue neutral). It considers two values for the substitution elasticity between labor and capital:  $\frac{1}{3}$  and  $\frac{1}{6}$ . These values imply investment elasticities of, respectively,  $-\frac{1}{2}$  and  $-\frac{1}{4}$ , with the former more consistent with the international literature and latter perhaps more appropriate for Japan. The comparative statics in Box 1 suggest that a 5 percentage-point reduction in the CIT rate expands investment by between  $1\frac{1}{2}$  and 3 percent in the long run, while output rises by between  $\frac{1}{2}$  and 1 percent. Wages are  $1\frac{1}{2}$  percent higher in the new equilibrium.

**Box 1. CIT, Investment, and Output: A Back-of-the-Envelope Calculation**

Suppose output (Y) is given by a CES production function with CRS in the inputs labor (L) and capital (K), i.e.  $Y = \text{CES}(L, K)$ . Linearizing production gives:

$$\tilde{Y} = \omega_K \tilde{K} + \omega_L \tilde{L} \quad (1)$$

Where a tilde~ refers to a relative change  $\tilde{X} = \frac{dX}{X}$  and  $\omega_K$  and  $\omega_L$  are the capital and labor income shares, with  $\omega_K + \omega_L = 1$  due to CRS.

Profits are determined by output sold at price P, minus the cost of labor at wage W and the cost of capital, R. Profit maximization with respect to K and L, subject to the production function gives the usual FOCs for labor demand and investment. Linearizing those gives:

$$\tilde{K} - \tilde{L} = \sigma(\tilde{W} - \tilde{R}) \quad (2)$$

Where  $\sigma$  is the elasticity of substitution between labor and capital. Hence, the capital/labor ratio varies with the relative cost of labor and capital.

Under perfect competition and assuming the price P being fixed on the world market, the zero profit condition reads as:

$$0 = \omega_K \tilde{R} + \omega_L \tilde{W} \quad (3)$$

Labor supply (L) is assumed to be a function of the wage (W). Linearizing labor supply and assuming equilibrium on the labor market, we get:

$$\tilde{L} = \eta \tilde{W} \quad (4)$$

Where the uncompensated elasticity of labor supply  $\eta > 0$ , i.e. labor supply is upward sloping.

We calibrate  $\omega_K = 0.2$  and  $\omega_L = 0.8$ . Based on the consensus estimate in Chirinko (2003), we first set  $\sigma = \frac{1}{3}$ . This implies an elasticity of investment to the cost of capital in the model of 0.5. Based on a meta analysis of Evers et al. (2008), we set  $\eta = \frac{1}{4}$ .

We simulate the impact of a CIT rate cut by 5 percentage points as follows. First, we take  $\tilde{R}$  as exogenous (assuming that the after-tax return is fixed on the world market) and solve (1) – (4) for  $\tilde{Y}$ ,  $\tilde{L}$ ,  $\tilde{K}$  and  $\tilde{W}$ . Then, we relate  $\tilde{R}$  to a reduction in the CIT rate using estimates from Kubota and Takehara (2007). They find that CIT rate is cut from 35 to 30 percent reduces the cost of capital in Japan—a weighted average for different sectors and modes of finance—from 6.84 to 6.44 points, i.e. it drops by 5.85 percent. Substituting this in the above equations gives  $\tilde{Y} = 0.9$ ,  $\tilde{L} = 0.4$ ,  $\tilde{K} = 2.8$  and  $\tilde{W} = 1.5$ . With  $\sigma = \frac{1}{6}$  (so that the investment elasticity to the cost of capital is halved), investment expands by 1.6 percent and output by 0.6 percent. With inelastic labor supply ( $\eta = 0$ ), investment rises by 2.4 percent and output by 0.5 percent.

## Investment and Cash Flow

Today, business cash flow is buoyant in many Japanese companies and does not seem to impede investment. Yet, cash-flow effects of corporate tax cuts might influence investment in companies suffering from credit restrictions. This may be particularly relevant for new or innovative companies that have difficulties to access credit. Hassett and Hubbard (2002) report some supporting evidence for the impact of net internal funds on investment in the US, although the effect is not quite robust. Hoshi, Kashyap, and Scharfstein (1991) find that cash flow has a significant impact on investment in Japan, although it is small for firms who have a strong relationship with their main bank (and for whom external finance does not impose a restriction). Uemura (2004) finds that cash flow has a positive and statistically significant impact on investment for 8 out of 13 industries in Japan. Also Kang (2014) reports that the cash flow to GDP ratio has a statistically significant positive impact on the investment to capital stock ratio. Using his coefficient for the cash flow and data for 2013 on investment and the capital stock, the results imply that a 5 percentage-point reduction in the CIT rate, *ceteris paribus*, increases investment by 0.4 percent.

## Foreign Direct Investment

Although nontax factors tend to be more important for foreign direct investment (FDI), empirical studies consistently report significant tax effects too. Thereby, the AETR has generally more explanatory power in FDI regressions than the METR (Devereux and Griffith, 2002), implying that FDI is not so much a marginal decision but an inframarginal discrete choice by an MNC, such as a location choice. De Mooij and Ederveen (2008) perform a meta analysis of the literature on taxation and FDI. Based on 427 elasticities obtained from 31 studies, they find a consensus estimate for the semi-elasticity of FDI to the AETR of  $-3.2$ , i.e. a 10 percentage-point reduction in a country's AETR increases its stock of FDI, on average by 32 percent. Note, however, that not all FDI is greenfield investment; a significant share reflects mergers and acquisitions (M&A). For example, between 2010-2012, UNCTAD (2013) reports that 60 percent of Japanese inward FDI was greenfield and 40 percent comprised of M&A.

What do these elasticities imply for the impact of a CIT rate cut for the Japanese economy? According to ZEW (2012) the CIT rate cut in Japan at the central government level in April 2012 from 30 to 28.1 percent resulted in a decline in the AETR by 1.6 percentage points. Extrapolating this, a 5 percentage-point CIT rate cut will reduce the AETR by 4.2 percentage points. Using the semi-elasticity above, this will raise inward FDI by 13.4 percent. The current stock of inward FDI in Japan is 3.4 percent of GDP, equivalent to 2.1 percent of the total private capital stock (which is estimated at 160 percent of GDP). Assuming that 60 percent of the extra FDI inflow is greenfield investment, the higher FDI inflow will raise the total capital stock in Japan by approximately 0.2 percent ( $13.4 \times 0.021 \times 0.6$ ). Of course, the ultimate economic impact of the FDI inflow will depend also on other

factors, e.g. the extent to which it enhances competition in domestic markets or how it improves productivity through technology diffusion.

Overall, we may expect a CIT rate reduction by 5 percentage points to raise investment through the three channels above: through the cost-of-capital channel by approximately 1½ percent; through cash-flow effects by around ½ percent; and through inward FDI by another ¼ percent. The total impact might thus be approximately 2¼ percent. Scaled to a rate reduction of 12 percentage points (with a static revenue cost of 1 percent of GDP), the expected investment effect would be 5½ percent.

### **C. Effects on Productivity and Wages**

One of the most controversial issues in public finance is who bears the incidence of the CIT. To the extent that the CIT is a tax on economic rents, the owners of a firm will bear the burden without being able to shift it into prices. However, shareholders do not necessarily bear CIT on normal capital returns. In fact, if capital is more mobile internationally, it seems likely that after-tax returns on capital are determined on the world capital market and that owners can shift the incidence entirely. In particular, a higher CIT rate will cause an outflow of capital which, under decreasing returns, will raise the before-tax return such that equilibrium is restored. Meanwhile, the lower capital-labor ratio reduces labor productivity and wages. Thus, workers rather than shareholders bear the incidence of the CIT. Recent empirical evidence by Arulampalam et al. (2012) and Fuest et al. (2013) suggests indeed that workers bear between 45 and 75 percent of the incidence of the CIT in the UK and Germany. To the extent that such effects would carry over to Japan, it would make a CIT cut particularly attractive as wage growth has been sluggish and is one of the main agenda items of Abenomics.<sup>15</sup>

## **IV. FISCAL COST OF A CORPORATE TAX CUT**

This section discusses the expected fiscal implications of a reduction in the CIT rate. We focus especially on the potential of ‘dynamic scoring’ effects (dynamic revenue estimates that take behavioral implications of a CIT rate cut into account). These should capture all possible effects on the tax base induced by changes in the rate, including through investment, debt bias, and income shifting.

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<sup>15</sup> Studies by Vartia (2008) and Arnold et al. (2011) find evidence for positive effects of a lower CIT on total factor productivity. This raises the question what channels could drive such productivity gains. In this regard, Cullen and Gordon (2007) emphasize the possible impact of the CIT on entrepreneurship, yet such effects are found to be empirically ambiguous.

### A. Signs of Laffer Effects?

The Laffer curve has inspired many researchers around the world to explore the relationship between tax revenues and tax rates, including for the CIT. For instance, Devereux (2007), Clausing (2007), and Brill and Hassett (2007) use cross-country panel data for OECD countries to explain CIT revenue by a polynomial of the CIT rate and a number of control variables. The results point to an inverse-U shape, consistent with the Laffer curve. The revenue-maximizing rate is found to be somewhere between 16 and 42 percent, with most estimates pointing to revenue-maximizing rates of around 30 percent. The latter would imply that CIT rates exceeding 30 percent would be on the declining slope of the Laffer curve and that reducing the CIT rate from a value above that would be (more than) self-financing. With a rate of 35 percent, Japan would fall in that category.

However, the results of these studies have been forcefully challenged. A recent study by Kawano and Slemrod (2012) criticizes the omission of country-fixed effects from the regressions listed above. This can lead to spurious correlation due to unobserved country-specific variables that affect both tax rates and tax revenues. By including country fixed effects, the authors find that tax coefficients in the regressions become insignificant; and some point estimates now suggest a revenue-maximizing rate of 75 percent or higher. The authors also note the strong correlation between CIT rates and tax provisions that determine the CIT base, such as depreciation allowances and tax incentives. The omission of base elements may yield biased estimates for the tax rate coefficients. Kawano and Slemrod (2012) conclude that the relationship between revenue and rates is tenuous. It raises important questions about the reliability of estimated revenue-maximizing CIT rates. This paper therefore adopts an alternative approach, starting from micro elasticities of the corporate tax base.

### B. Fiscal Impact Using the Elasticity of Taxable Income

To shed light on the revenue impact of CIT rate changes, note that revenue of the CIT ( $R$ ) equals the CIT rate ( $\tau$ ) times the CIT base ( $B$ ). The change in CIT revenue in response to a change in the CIT rate can thus be written as:

$$\Delta R = B\Delta\tau + \tau\Delta B = (1 + \varepsilon)B\Delta\tau \quad (1)$$

Where  $\varepsilon \equiv \frac{\Delta B/B}{\Delta\tau/\tau}$  denotes the tax elasticity of the CIT base. The term  $B\Delta\tau$  in expression (1) stands for the static impact of a CIT rate change on CIT revenue, i.e. the effect if there were no change in the CIT base. This is what is usually taken by governments when estimating the revenue impact of a change in the tax rate. In the case of Japan, for example, a reduction in the CIT rate by 1 percentage point (i.e.  $\Delta\tau = -1$  percent) involves a static revenue cost of approximately ¥400 billion, or 0.08 percent of GDP. The dynamic revenue impact of the CIT rate reduction ( $\Delta R$ ) can be smaller if the tax elasticity of the CIT base is negative ( $\varepsilon < 0$ ), i.e. if the reduction in the CIT rate causes the CIT base to expand. The value of  $(1+\varepsilon)$  determines

the net long-run revenue effect per yen of CIT cut. For instance, if  $\varepsilon = -0.25$  a CIT cut by ¥100 would ultimately cost only ¥75. If  $\varepsilon = -1$ , dynamic scoring is so large that the long-run revenue impact of the CIT rate cut is zero. In that case, a CIT rate cut is self financing and the CIT rate is at the top of the Laffer curve.

So, how large is  $\varepsilon$ ? This parameter should capture several decision margins, including investment responses, changes in the financial structure of corporations, and taxable income shifting, either by MNCs that shift income to low-tax countries or by SMEs that shift taxable income into or out of the corporate tax base. The overall impact of these responses has been estimated for a variety of countries and firm types. Box 2 reviews these empirical findings for some countries.

### Box 2. Estimates of the Elasticity of Corporate Taxable Income

Several studies estimate the elasticity of the CIT base for individual corporations, i.e. our parameter  $\varepsilon$  in the main text. However, studies sometimes use different definitions of the elasticity. For instance, some estimate the semi-elasticity of the CIT base ( $\beta$ ), which measures the change in the tax base in response to a one percentage-point change in the CIT rate. It relates to  $\varepsilon$  as:  $\beta \equiv \frac{\Delta B/B}{\Delta \tau} = \frac{\varepsilon}{\tau}$ . With a Japanese CIT rate of 35 percent, it implies  $\varepsilon = 0.35\beta$ . Other studies measure the effect of a one percent change in the after-tax earnings on taxable income ( $\gamma$ ), i.e.  $\gamma \equiv \frac{\Delta B/B}{\Delta \tau/(1-\tau)} = -\frac{(1-\tau)}{\tau} \varepsilon$ .<sup>16</sup> With the Japanese CIT rate of 35 percent, we can transform this into  $\varepsilon = -0.54\gamma$ .

Gruber and Rauh (2007) use micro data for US firms to estimate the parameter  $\gamma$ . In different specifications, it is consistently found to be around 0.2. Bruce et al. (2008) directly estimate  $\varepsilon$  for the federal and state-level CIT. For the federal CIT, they find  $\varepsilon = -0.2$ , while for the state-level CIT  $\varepsilon = -0.4$ . They ascribe the difference to income shifting between states. Dwenger and Steiner (2008) perform a similar exercise using data for German firms in the early 2000s. Expressed in terms of  $\varepsilon$ , their estimate ranges between  $-0.3$  and  $-0.5$ . Devereux, Liu and Loretz (2014) identify the elasticity of corporate taxable income in the UK by looking at kinks in the progressive CIT schedule. They find for companies with an income around £300 thousand a value of 0.16 for the parameter  $\gamma$ . For companies at a kink of £10 thousand, they find  $\gamma = 0.55$ .

A large number of studies estimate the elasticity of taxable income for subsidiaries of MNCs. They generally use profitability measures, either before interest (so that debt shifting is not included) or after interest (so that debt shifting is included). Heckemeyer and Overesch (2013) perform a meta analysis using 23 such studies with 231 estimates. Thereby, they transform study results into a semi elasticity (i.e. our parameter  $\beta$  above). The consensus estimate for the elasticity capturing all income shifting (including debt shifting), is  $-0.8$ , i.e. a 10 percentage-point lower CIT rate is, on average, associated with an 8 percent higher reported profit. Without debt shifting, the effect is about two-thirds of this.

#### Estimates of the Elasticity of Corporate Taxable Income

	Remarks	Original estimate	Value of $\varepsilon$
Gruber & Rauh (2008)	US firms – Federal US CIT	$\gamma = 0.2$	$-0.1$
Bruce, Deskins&Fox (2008)	US firms – State US CIT	$\varepsilon = -0.4$	$-0.4$
	US firms – Federal CIT	$\varepsilon = -0.2$	$-0.2$
Dwenger&Steiner (2008)	German firms	$\varepsilon = -0.3$	$-0.3$
		$\varepsilon = -0.5$	$-0.5$
Devereux et al. (2014)	UK medium-sized firms	$\gamma = 0.16$	$-0.1$
	UK small firms	$\gamma = 0.55$	$-0.3$
Heckemeyer&Overesch (2013)	Meta study on MNCs	$\beta = -0.8$	$-0.3$

<sup>16</sup> This is analogous to the elasticity of taxable income for personal taxes used in the literature, see e.g. Saez, Slemrod, and Giertz (2012).

The largest estimate of  $\varepsilon$  in Box 2 is -0.5; most estimates are between -0.1 and -0.3. The elasticity of taxable income seems somewhat larger for SMEs<sup>17</sup> and for MNCs than for other firms; and they are also found to be larger for the local CIT than for the federal CIT in the US. With a long-run elasticity of taxable income of either -0.1 or -0.3, a cut in Japan's CIT rate by 12 percentage points would involve a long-run fiscal cost in the range between 0.9 and 0.7 percent of GDP, compared to a static revenue loss of 1 percent of GDP. Yet, the value of  $\varepsilon$  for Japan may differ from that in other countries. For instance, the low stocks of inward and outward FDI relative to other countries may imply that Japan's tax base is less vulnerable to profit shifting by MNCs. Moreover, the low estimated elasticities for investment and corporate debt in Japan might imply a relatively low value of  $\varepsilon$ ,<sup>18</sup> meaning that long run fiscal costs are closer to the upper bound of 0.9 percent of GDP.

### C. General Equilibrium Effects

Estimates based on the elasticity of taxable income are comprehensive, but may have a drawback in that they do not capture general equilibrium effects that could be triggered by a CIT rate reduction. For instance, they do not reflect increases in the number of companies that can arise due to increases of inward FDI (as  $\varepsilon$  captures only effects on taxable income of existing companies). Moreover, to the extent that a lower CIT rate increases employment and economic growth, tax revenue from the PIT and consumption tax can rise too. However, higher GDP growth may not only increase aggregate tax revenues, but also aggregate public spending. For instance, public sector salaries, social benefits and pensions are generally indexed to private sector wages. Thus, higher GDP will have an ambiguous effect on the fiscal balance. In fact, when starting from a large fiscal deficit—which is the case in Japan—a proportional expansion of both expenditures and taxes can actually worsen the fiscal balance.

Recent studies have employed general equilibrium models to assess dynamic-scoring effects of tax cuts through changes in GDP. Using a simple neoclassical growth model, Mankiw and Weinzierl (2006) find that the long-run feedback effect on revenue for capital income taxes is 50 percent. Trabandt and Uhlig (2011) find similar results for the US and larger effects for Europe. For Japan, Nutahara (2013) reports that the capital tax rate is close to the top of the Laffer curve, i.e. dynamic scoring effects are close to 100 percent. Hiraga (2011) even reports that a 5 percentage point CIT rate cut in Japan will increase CIT revenue by around 50 percent in the long run.

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<sup>17</sup> Income shifting into the CIT by SMEs will come along with a decline in PIT revenue, which is not accounted for in the calculations here.

<sup>18</sup> The type of response captured by  $\varepsilon$  matters for the revenue dynamics from a CIT rate cut. For instance, if a lower CIT rate changes taxable income due to income shifting, this is likely to be relatively fast and revenue might increase in the short run. However, if it stimulates investment, taxable income may fall rather than increase in the short run. This is because tax depreciation allowances often exceed any increased income and it can take several years before profits start to increase.



Yet, other models yield (much) smaller effects, depending on their structure and parameter calibration. Ganelli and Tervala (2014) employ a New-Keynesian two-country model to assess the difference between short and long-run effects on the budget. They report dynamic scoring effects of income taxes in the order of 22 percent in the long run, while short-run effects might in fact be negative. Model simulations by CAO (2010) suggest that an increase in the CIT by 1 percentage point of GDP in Japan will ultimately improve the primary balance by 0.84 percentage point of GDP, consistent with a value of  $\varepsilon$  at the macro level of  $-0.16$  (where offsetting effects come not just from the CIT, but also from other taxes).

In the practice of policy making, dynamic scoring is a highly controversial issue.<sup>19</sup> This is especially due to the large empirical uncertainties and the heroic assumptions sometimes made in simplified intertemporal models. This holds especially for the analysis of CIT reform, where assumptions regarding the model structure, the calibration of key parameters and the modeling of CIT design are not generally well-captured. For example, none of the models discussed above includes important aspects of CIT reform, such as economic rents, the debt-equity choice, tax arbitrage by SMEs, FDI, or multinational profit shifting. Parameters, moreover, are sometimes at odds with empirical evidence. For instance, many use a Cobb-Douglas production function, which implies a substitution elasticity between labor and capital of one (whereas empirical evidence suggest a value of approximately one third, and even lower than that for Japan). Some models also keep public expenditures fixed when GDP expands, which is inconsistent with stylized facts. It is therefore common practice for responsible authorities to keep GDP fixed when estimating the revenue effect of policy changes.<sup>20</sup>

## V. CIT REFORM OPTIONS FOR JAPAN

Given the tight fiscal constraints faced by the Japanese government, the revenue loss from a reduction in the CIT rate would need to be offset by other measures. Moreover, a CIT rate

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<sup>19</sup> In the US, official revenue estimates hold GDP constant, unlike the studies of academics using intertemporal economic models. One reason is that the intertemporal models are either too simplistic, or appear as ‘black boxes’ in which the underlying assumptions are difficult to verify against empirical evidence. Where simpler models are used, parameters are generally not supported empirically (see e.g. Gravelle, 2014). Since 2003, the US Joint Committee on Taxation is required to provide a macroeconomic impact analysis of tax legislation. In doing so, it adopts various models that combine theoretical rigor with empirically validated parameters. In Joint Committee on Taxation (2005), it assesses the dynamic scoring effects of a reduction in the CIT rate and report effects in the order between  $-0.04$  and  $-0.27$ . These dynamic effects are not captured in official estimates.

<sup>20</sup> CIT reform can affect debt dynamics through a so-called denominator effect. In particular, the trajectory of public debt as share of GDP is determined by the primary fiscal balance and the difference between the rate of interest and the rate of economic growth. Intuitively, a higher growth rate implies that the denominator (GDP) grows faster than public debt (which accumulates with interest) so that the debt ratio will improve. Whether this effect is likely or not depends on several factors, however. For instance, a lower CIT could affect the interest rate in a similar manner as the growth rate, so that the denominator effect is offset. Moreover, it is unclear whether a lower CIT rate will induce a permanent effect on the rate of economic growth, or only an impact on the level of aggregate output. In the latter case, there will be no discernible impact on debt dynamics through the denominator. A more precise analysis of these issues goes beyond the scope of this paper.

reduction would address some, but not all structural weaknesses of the Japanese CIT that were identified in Section II. This opens a broader debate on tax reform. This section discusses three direction of such broader reform: (i) a revenue-neutral shift in the tax mix; (ii) a CIT rate cut financed by base-broadening within the CIT (or perhaps dividend taxation); and (iii) a less costly and more targeted CIT reform to improve investment incentives. Before doing so, we elaborate on the timing of CIT reform.

### **A. Timing**

A reduction in the CIT rate can be implemented upfront and in one-step or—especially if the reduction is large—phased in over a series of smaller tax cuts in different years. The advantage of a big bang might be that it eliminates uncertainty for business as to whether subsequent rate cuts will indeed be effectuated. Also, intertemporal tax planning caused by rate differences over time can be avoided. However, a gradual approach comes along with smaller revenue losses in the short term. Moreover, a lower CIT rate reduces not only the tax burden on new investment, but also on past investments that are sunk. It thus conveys a windfall gain, which causes no behavioral effect. By phasing in tax relief over time, the windfall gain is reduced. If future tax cuts are credibly announced in advance by the government, investors will anticipate them when making current investment choices. In fact, current investment becomes more attractive if (accelerated) depreciation will be deducted at a high CIT rate today, while returns in the future will enjoy a lower rate. Several countries that recently cut their CIT rates have therefore taken a gradual approach (such as the UK and Portugal). A credible pre-announcement of the rate cut is important in this case to reap the immediate benefits of investment stimulus.

### **B. Revenue-Neutral Reform Away from CIT**

#### **Strengthening Consumption Taxes**

To ensure revenue-neutrality, the reduction in the CIT rate could be accompanied by a further strengthening of revenue of the consumption tax.<sup>21</sup> In particular, each percentage point consumption tax increase is estimated to yield around ¥2.5 trillion, or 0.5 percent of GDP. Hence, a 2 percentage-point higher consumption tax (yielding 1 percent of GDP), would allow for a reduction in the CIT rate by approximately 12 percentage points as part of a revenue-neutral reform. Such a shift in the tax mix is expected to yield several economic benefits, as indicated in Sections III and IV and summarized in Table 2. However, higher consumption taxes may create their own distortions, such as on labor supply, although the associated efficiency costs are expected to be smaller than those associated with the CIT.

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<sup>21</sup> Note that revenue of the consumption tax in Japan is currently earmarked for social security spending. Yet, the government also provides cash grants for social security (about 21 trillion yen in the FY2014 budget). Where we say that revenue from the CIT is replaced by higher consumption taxes, we in fact mean that higher consumption taxes allow for a reduction in these grants, which frees up fiscal space to cover the cost of a lower CIT.

Moreover, a shift in the tax mix would also have distributional consequences. The benefits of the lower CIT may disproportionately accrue to higher incomes. But because some of the CIT incidence falls on labor, lower CIT rates would mean higher wages and provide some offset to the effects of a higher consumption tax for various income groups. Combined with targeted transfers to low-income households, like the one the government introduced in April 2014 with the first consumption tax hike, a comprehensive tax reform including a further increase in the consumption tax rate and CIT rate reduction could have an economic benefit while addressing regressivity concerns.

**Table 2. Summary of Estimated Effects of Lower CIT Rate by 1 Percent of GDP /1**

<i>Expected effect of a 12 pp CIT rate cut on:</i>	<i>Effect size (cumulative)</i>	
	<i>International evidence</i>	<i>Japanese evidence</i>
1. Debt-equity ratio	– 3 percent	–1¾ percent
2. Investment	+ 8½ percent	+ 5½ percent
3. Income shifting by MNCs	+ 10 percent	-
4. Income shifting by SMEs	+ 10 percent	-
5. Corporate taxable income	+ 10 and 30 percent of static revenue loss	
<hr/>		
Static CIT revenue loss of 12 pp rate cut	Approximately –1 percent of GDP	
Dynamic CIT revenue loss of 12 pp rate cut	Between –0.7 and –0.9 percent of GDP	

/1 Expected effects, based on evidence presented in Sections III and IV. All effects are scaled so as to replicate a reduction in the CIT rate of 12 percentage points, with a static reduction in tax revenue by 1 percent of GDP.

### **Improving Local Public Revenue Sources**

Public finance economists generally consider the CIT as an unattractive local source of funds. For instance, the relatively high volatility of CIT revenue can harm the ability of local governments to deliver public services, which are mostly independent of the business cycle. Moreover, the weak link with the benefit principle renders the CIT less attractive from a fairness perspective at the local level. Due to the concentration of businesses in a few agglomerations, moreover, local CITs can generate regional inequities or induce local tax competition. In the OECD, therefore, only eight of the 34 countries levy local CITs. A preferred source of local government revenue is generally the immovable property taxes (land and buildings). For instance, its share in total local tax revenue is 100 percent in the UK and Australia, 90 percent in Canada, 75 percent in the US, and 53 percent in France. In Japan, only 30 percent of local tax revenue comes from recurrent property tax (Norregaard, 2013). The various decentralized CIT rates in Japan offer scope for replacing them by local immovable property taxes. Apart from a more stable and perhaps fairer revenue base of local governments, such a shift could encourage growth at the national level,

as is apparent from the empirical growth studies discussed in Section III, which robustly rank property taxes as the most efficient tax.

### **C. CIT Base Broadening and Rate Reduction**

If a lower CIT rate is to be financed by offsetting base broadening measures within the CIT, this will change the effects of the reform on investment and growth, as compared to what has been analyzed in Section III. For instance, a revenue-neutral reform of base broadening and rate reduction will leave the average effective tax at a macro level broadly unchanged, so that little effect on inward FDI can be expected. Moreover, by shifting the tax burden away from the most profitable investments toward marginal projects, base broadening can increase the METR and deter investment. The lower statutory rate can still yield benefits in the form of less profit shifting, smaller debt bias, and less burden on more profitable investment, but may come at a price of lower total investment.

#### **Leaner Depreciation Allowances**

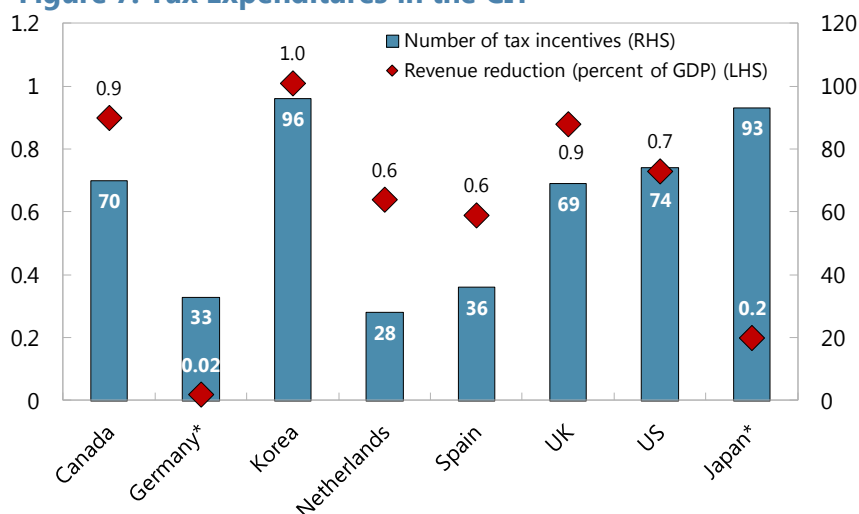
An example where base broadening will increase the METR is when depreciation allowances are reduced. Indeed, leaner depreciation will immediately make investment more expensive, while a lower CIT rate only partly offsets this effect. Simulation models for Europe and the US indeed find that scrapping depreciation allowances in exchange for CIT rate reduction in a revenue-neutral fashion will generally deter investment (Bettendorf et al., 2010; Diamond et al., 2014). Note also that the scope for base broadening through leaner depreciation allowances in Japan is limited. For instance, the depreciation of buildings and intangibles is currently less generous than in Germany and France, while the US and France have also more generous depreciation rules for machinery (ZEW, 2012). As noted by Suzuki (2014), however, depreciation for machinery in Japan is more generous compared to Germany and some countries in the region.

#### **Cutting Tax Incentives**

There are several special tax deductions and credits in Japan's CIT to encourage specific investments, such as research and development (R&D) or energy rationalization. Numerous special incentives also exist for SMEs. Recently, the government introduced a tax credit for companies that increase the number of employees; and another credit is granted to stimulate wage increases. The total number of tax incentives in Japan is counted at 93 at a central government level, which is among the highest in a group of advanced economies (Figure 7). Despite this large number, however, the overall estimated revenue cost is relatively modest at 0.2 percent of GDP.<sup>22</sup>

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<sup>22</sup> This refers to revenue foregone at the central government level in 2012. Some tax incentives also narrow the base of local CIT. The revenue effect for the total government budget might thus be slightly higher.

**Figure 7. Tax Expenditures in the CIT**

\* Revenue reduction for the central government only.  
Source: OECD; Japanese authorities.

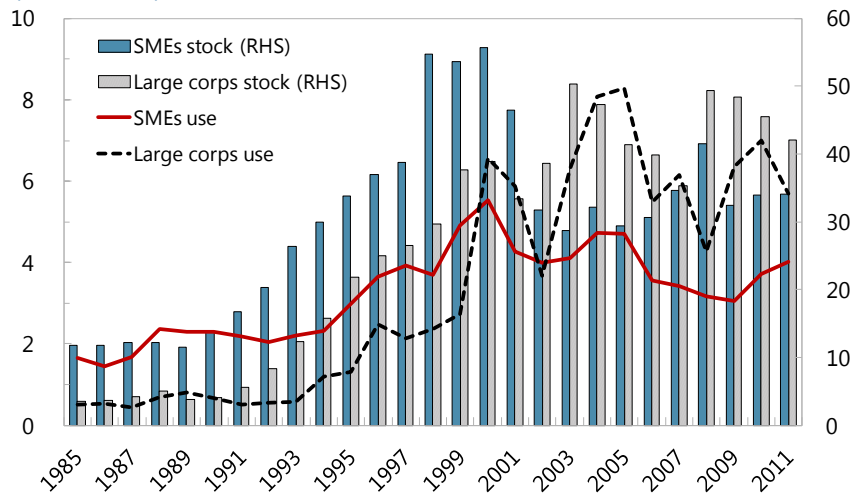
Some of the 93 tax incentives in Japan might be justified on efficiency grounds. For instance, incentives for R&D can internalize the positive externalities associated with such activities. And given Japan's aim to end deflation, a temporary use of special tax credits to encourage wage growth may be desirable. Other incentives, however, may be less effective and add to the complexity of the CIT. For instance, incentives targeted to specific industries or firm types may distort production efficiency and serve special interests, rather than the general public interest. Tax incentives for tangible capital may also skew investment toward manufacturing activity relative to services. A careful social cost-benefit analysis of the existing incentives might thus be needed to examine the extent to which base broadening can help finance a cut in the CIT rate. It seems that the number of tax incentives can be significantly reduced.

### **Tighter Loss Offsets**

The current CIT base is significantly narrowed by losses carried from the past. Indeed, accumulated losses have increased since the early 2000's (Figure 8). For 27 percent of the profit making firms, taxable income was fully offset by carried losses; more than 20 percent of total taxable income was thus washed away. The share of companies with tax payable in Japan is only 28 percent (53 percent if limited to large firms), which is significantly lower than 44 percent in Germany, 52 percent in the UK, and 54 percent in Korea and the US.

**Figure 8. Loss Carry Away**

(In Trillion Yen)



Note: SMEs defined as firms having less than 100 million yen in capital.

Source: NTA

Restricting loss offset can of course limit such revenue forgone. Yet, it will come at a price. In particular, asymmetry in the tax treatment of profits and losses can deter risk taking, since the CIT will function less as an insurance device. Recent evidence, moreover, finds that tighter loss offset rules in advanced countries have a significant negative impact on investment, both through lower expected investment returns and because of cash-flow effects (Dessler and Overesch, 2013).

Advanced countries typically have loss-carry-forward periods of at least 5 years (Italy, Korea), although some allow them indefinitely (Germany, France, UK). The 9-year period in Japan fits in this range, but might still be restrictive for some investors with large, lumpy investments. Since 2011, the annual offset of past losses for large corporations in Japan is limited to 80 percent of current profit; such limitations are also common among countries, with limits of 60 percent in Germany and 50 percent in France. All considered, there does not seem to be a lot of room for further reducing the generosity of the loss-carry-forward system.

### Stricter Thin Capitalization Rules

Excessive leverage can unduly narrow the base of the CIT. This is often a special concern for MNCs, which can finance operations in high-tax countries with excessive levels of intracompany debt as a way to minimize global tax liabilities. To address such debt shifting, Japan imposes an earning stripping rule under which deductions for net interest paid to related parties are denied when they exceed 50 percent of income. In recent years, several advanced countries have tightened such rules to levels stricter than that. For instance, Germany, Italy and Spain cap interest deductibility of large companies (with total interest exceeding a certain threshold) at 30 percent of income. In France, large firms can only deduct 75 percent of interest (including for external debt), while further restrictions apply to related-party debt. Also the interest rate in France is capped at a maximum of the annual average of

the loan rates applied by banks. Stricter rules in Japan could help protect the Japanese tax base against erosion. However, inward FDI in Japan is much smaller as a percent of GDP than in the other countries, so that debt shifting might be less significant. Moreover, strict rules run the risk of raising the cost of capital on debt-financed investments, thus reducing the attractiveness of Japan as a location for FDI. Stricter thin capitalization rules should therefore be considered if there are indications of abuse.

### **Eliminating the Special Treatment of SMEs**

The central government CIT rate for SMEs in Japan is 19 percent for incomes below ¥8 million (although this rate is temporarily reduced to 15 percent until 2015) and 25.5 percent above that. The revenue forgone due to the reduced rate is estimated at ¥200 billion (¥300 billion for the current 15 percent rate). Local enterprise taxes are also progressive in terms of company income (Table 1). This progressivity in the rate structure is not uncommon in the OECD: 10 other countries apply progressive rate structures in their CIT. Yet, 23 OECD countries have a single, flat CIT rate.

Progression in the CIT is generally undesirable from the perspective of equity and efficiency. First, rate progression in the CIT is of a fundamentally different nature than progression in the PIT, where it serves distributional objectives. In the CIT, the link with redistribution is moot since legal entities cannot bear the ultimate incidence of taxation—which only human beings can. In fact, reduced CIT rates become regressive if the ultimate beneficiaries are wealthy business owners. Second, reduced CIT rates for SMEs can be distortionary. By taxing small firms with low incomes at lower rates than large and profitable firms, the tax system may discourage firm growth and discriminate against investment where it is most profitable. Only where SMEs face specific market failures (such as credit constraints) or entry barriers (due to market power) can some special (tax) treatment be desirable for efficiency. This, however, does not generally call for progression in the CIT schedule (IDB, 2007). Moving towards a single, uniform CIT rate can therefore yield important benefits in Japan and raise additional revenue.

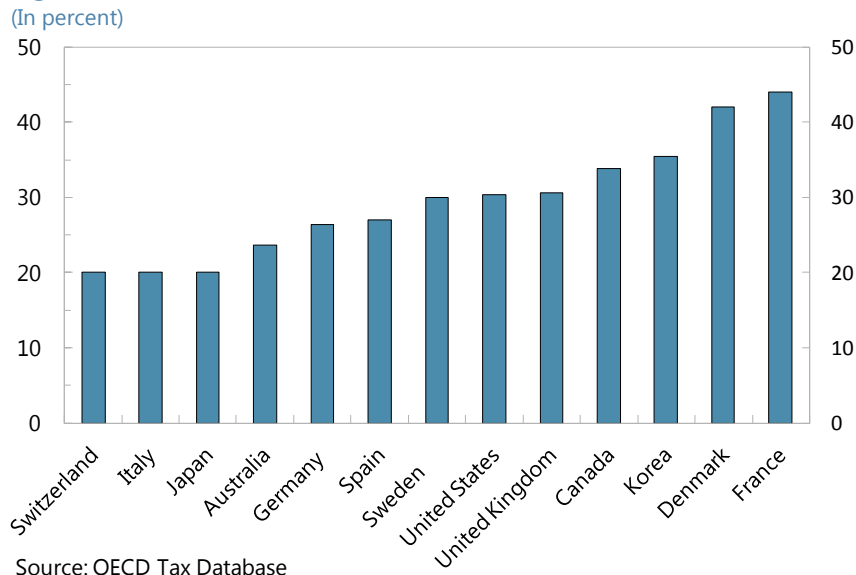
### **Reforming Dividend Taxation**

The total tax burden on capital income from SMEs depends on the combined burden of the CIT and the tax on dividends. As this burden is already higher than that of the PIT (Figure 5), a higher CIT rate for SMEs will magnify the existing distortion. However, a reduced CIT rate for SMEs is not the best way to address distortions between labor and capital income taxation. Instead, Japan might follow the example of other advanced economies and tax dividend income from SMEs at a lower rate than it currently does. For instance, the progressive PIT schedule might be replaced by a flat 20 percent tax on all dividends. This would improve neutrality with other forms of capital income, such as dividends from listed companies, interest income, and capital gains—eliminating arbitrage and distortions among them. Moreover, with a 35 percent CIT rate, the combined burden on dividend income would

become 48 percent<sup>23</sup>, which is close to the top PIT rate over a significant range of relevant incomes (Figure 5). Neutrality in the choice of legal form is thus also improved.

If the CIT rate would be reduced, it is important to rebalance the overall tax burden between labor and capital income in order to minimize arbitrage and distortion. This can be done in two ways: reducing the PIT on labor income or increasing the tax rate on dividends. A lower PIT is costly, and would significantly increase the fiscal deficit. A higher dividend tax rate does the opposite and can recover some of the revenue loss from the CIT rate cut. If the CIT rate were reduced from 35 to 30 percent, for instance, an increase in the dividend tax rate from 20 to 25 percent generates much the same overall tax burden on distributed profits as the current CIT with a dividend tax rate of 20 percent. Internationally, the current Japanese dividend tax rate of 20 percent is relatively low (Figure 9).<sup>24</sup>

**Figure 9: Personal Income Tax Rate on Earned Dividends, 2013**



<sup>23</sup>  $0.35 + 0.20 \times (1 - 0.35) = 0.48$ .

<sup>24</sup> The impact of a higher dividend tax on investment depends on the view one holds regarding the marginal source of finance. According to the ‘traditional view’ of dividend taxation, part of new investment will be financed by new equity, as dividend payouts have some intrinsic value by signaling to shareholders that the firm is doing well. By paying out dividends, new equity is needed to finance new investment. Dividend taxes increase the burden on new equity and will thus reduce investment. On the contrary, the ‘new view’ of dividend taxation assumes that mature firms finance marginal investments by retained earnings. Shareholders can thus not escape dividend taxes since their investment is trapped in the firm. Dividend taxes therefore do get capitalized in share prices, but have no impact on marginal investment. Which view is most important is not a priori clear and empirical evidence is inconclusive (Auerbach, 2002). Perhaps the new view is more important for mature firms but the traditional view for younger ones. If so, higher dividend taxes will have at least some adverse effect on investment.



## Reducing the Wage Deduction

Tajika and Yashio (2005) argue that the favorable wage income deduction in the Japanese PIT induces many SMEs to incorporate and then distribute income in the form of wage payments (e.g. to the owner-director of the firm). As a result, many SMEs report losses for the CIT.<sup>25</sup> Rationalization of the generous wage deduction system is therefore essential as it could reduce such arbitrage and boost revenue from both the PIT (by expanding its base) and the CIT (by discouraging wage payments of corporate SMEs).<sup>26</sup>

### D. Allowance for Corporate Equity

A lower CIT rate as a way to encourage investment has the disadvantage that it provides tax relief on rents, i.e. returns to investors in excess of the minimum they require. This does not affect behavior.<sup>27</sup> There might be more targeted ways to reduce investment distortions, with a larger impact on investment per yen of tax relief granted.

One such reform is the introduction of an allowance for corporate equity (ACE) system.<sup>28</sup> The ACE provides a deduction for a notional return on equity, in principle at a risk-free rate of return on capital, but in practice at something like the yield on government bonds. The base to which this rate would apply is the book value of equity, minus equity participations in other firms (to avoid duplication of tax relief). The ACE transforms the CIT into a system that is neutral with respect to marginal investment, because tax is ultimately paid only on returns to investment in excess of the normal return. Thus, the METR becomes zero and the CIT becomes a tax on rents. It also makes irrelevant to the firm's decision both the tax rules for depreciation and the rate of inflation. And finally, the ACE makes the CIT neutral with respect to firm's debt-equity choice and thus eliminates debt bias. There is now increasing experience from countries that have an ACE, including Belgium, Brazil, and Italy. These schemes have encountered no particular practical difficulty and, where it has been studied, the available evidence is that they have indeed reduced leverage ratios (Klemm, 2007; Princen, 2012).

A potential concern with the adoption of an ACE is its revenue cost. Tentative calculations suggest that a full ACE in Japan would involve an average budgetary cost per year of 9.4 percent of current CIT revenue (De Mooij, 2012). However, the revenue loss can be

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<sup>25</sup> Tajika and Yashio (2005) estimate that the revenue loss due to the wage income deduction used by individual businesses is ¥720 billion or 30 percent of the PIT they would pay without the deduction.

<sup>26</sup> Ultimately, of course, the tax treatment of SMEs under different legal forms should be neutralized as much as possible by aligning tax burdens. If the tax system would maintain a higher tax burden on corporations compared to non-corporate businesses, consideration could be given to taxing the underlying shareholders in a transparent manner along the lines of the S-corporations in the US.

<sup>27</sup> This holds in principle if rents are location specific. If rents are firm-specific and mobile internationally, e.g. due to intangible assets, taxation can affect the location of assets and thus the tax base.

<sup>28</sup> The appendix discusses the design of an ACE in more detail.

mitigated by applying the ACE only to incremental equity, which is the route chosen by Italy in 2012 when it introduced an ACE. This does not reduce the economic benefits, since for existing capital the equity deduction is simply a windfall gain. At the same time, it reduces the short-run fiscal costs of the ACE.

De Mooij and Devereux (2011) assess the economic implications of an ACE, using a CGE model for the European Union. If the European-wide ACE is financed by an increase in the VAT, investment increases by almost 6 percent and GDP expands by almost 2 percent. If the ACE were financed by a higher CIT rate, investment would still rise by 5 percent and GDP expand by 1.8 percent. These findings indicate that, by targeting tax relief to lowering the METR, ACE is more efficient in stimulating investment in Europe than a CIT rate reduction. Moreover, the elimination of debt bias further adds to the welfare gains of the ACE. These benefits, of course, should be weighed against benefits induced by a lower CIT rate, such as smaller profit shifting incentives for MNCs and possibly larger attraction as a location for profitable FDI. Yet, for a large economy such as the EU, these effects do not overturn the principle gains of the ACE. The same may hold for a large economy such as Japan.

## VI. CONCLUSIONS

Japan's current CIT creates large distortions on investment, debt structures, and income shifting. A lower CIT rate, as envisaged by the current administration is expected to mitigate these distortions. In the short-run, moreover, it can help unlock the large cash reserves held by corporations, also if the rate cut is implemented gradually over several years. The long-run growth impact of a CIT rate cut is expected to be positive but modest.

In light of tight fiscal constraints, compensating fiscal measures are needed to finance a cut in the CIT rate in Japan as it is unlikely to be self-financing. This raises several issues. A reform package that includes a further increase in the consumption tax is beneficial on efficiency grounds but could raise distributional concerns which may need to be addressed. The scope for base broadening within the CIT is limited, and such reforms run the risk of undoing the positive investment effects of a rate cut. Still, the elimination of some tax incentives and the special treatment of SMEs could yield efficiency gains and help simplify the CIT. Also higher dividend taxes and a lower wage deduction can compensate for incurred revenue losses from a lower CIT rate and restore neutrality in the taxation of SMEs. Various local CITs could be replaced by more efficient recurrent immovable property taxes to provide local communities with a more stable revenue source. Given these considerations, a comprehensive reform would be the preferred strategy to address several of the weaknesses of the current CIT in Japan.

In the context of raising investment with limited fiscal costs, an allowance for corporate equity has special appeal to Japan. By reducing the marginal effective tax rate to zero, it provides a large incentive for firms to increase investment. And when applied to incremental equity, its fiscal costs would incur only gradually over time. The investment stimulus per yen of tax relief will thus be maximized.

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## APPENDIX I. ALLOWANCE FOR CORPORATE EQUITY

The allowance for corporate equity (ACE) seeks to neutralize the debt-equity distortion by supplementing interest deductibility in the CIT with a similar deduction for the normal return on equity. The ACE, originally proposed by the Capital Taxes Committee of the Institute for Fiscal Studies (IFS), has been advocated by many public finance economists (Mirrlees et al., 2010) as well as by IMF staff (IMF, 2009). This appendix discusses (i) the design of an ACE; (ii) its neutrality properties; (iii) country experiences with the ACE. For further references, see main text and Griffith et al. (2010).

### Model Design of an ACE

The ACE supplements interest deductibility with a deduction for the notional return on equity. The ACE base can either be the entire equity stock or, when the system is incremental, the increase in the equity stock relative to some base year. In the latter case, it is roughly speaking formed by new equity issues plus retention of after-tax profits, relative to the base year.

To avoid duplication of ACE, equity participations in other firms should be subtracted from the equity base. These participations will already be included in the equity base of the company that issued the shares. Participations in foreign companies should also be deducted from the ACE base, since foreign equity returns are not subject to domestic taxation. This is easily seen under the exemption system, but it is also a good approximation for countries with a worldwide tax system that allows deferral of income from foreign subsidiaries with a foreign tax credit on distribution. Dividends received from foreign companies add to the equity base in so far as they are reinvested. This reflects the principle that all domestic investments – including those financed through reinvestment of income earned abroad – should qualify for the ACE allowance.

The ACE allowance can become negative, leading to an addition of tax. If the balance of the equity value and participations in other firms becomes negative—e.g. for holding companies that finance participations primarily with debt—the ACE allowance involves an addition to the CIT base, rather than a deduction. In this way the ACE system guarantees tax neutrality between debt and equity also for holding companies, since the negative ACE allowance offsets the amount of interest that the holding company is allowed to deduct from taxable profits. It ensures that holding companies have no tax incentive to finance acquisitions by debt rather than equity.

The calculation of taxable profit under an ACE may be done exactly as under the current CIT. The company's financial accounts already include information on dividends, new share issues and acquisitions of shares in other companies, which are needed to calculate the equity base for the purpose of the ACE. In principle, the operation of an ACE system therefore does not require any information that the tax authorities do not already possess. From an administrative perspective, it should therefore be possible to introduce a full-blown ACE

system from one year to the other. The transition to the ACE only requires that a decision be made on the determination of the initial equity base of companies to be used during the first year after the reform. If last year's equity base is used, ACE is granted on the entire equity stock. If the initial equity base is set equal to zero, the system is incremental. In that case, the boost to equity-financed investment per unit of revenue lost is maximized.

To obtain full tax neutrality under the ACE, the imputed rate of return must be equal to the rate at which shareholders discount the tax savings from the company's future ACE allowances. This discount rate will depend on the degree of riskiness attached to these tax savings. If the tax law allows full loss offsets, shareholders will receive the tax benefit from the ACE allowance with full certainty. Hence, they will discount the tax savings from the ACE system at the risk-free rate of interest. To ensure tax neutrality, it is then sufficient to set the notional rate of return equal to the risk-free rate, e.g. proxied by the interest rate on government bonds. In practice the tax law does not allow full loss offsets, as losses can only be carried forward for a limited number of years, and never with interest added, and unutilized losses existing when a firm goes out of business cannot always be offset against other taxable income. Hence, there will be some risk attached to the ACE deductions. The risk will differ across companies depending on how much they are affected by the restrictions on loss offsets. A substantial part of the risk is likely to stem from the probability that the company goes bankrupt. This risk will be reflected in the rate of interest at which the firm can borrow, so setting the imputed rate of return equal to the interest on the company's long term debt would presumably ensure rough neutrality of the ACE. However, for administrative reasons it is necessary to use a common notional rate of return for all companies rather than applying firm-specific rates. In countries with a well-developed market for corporate bonds, the average interest rate on such bonds would be a natural benchmark for choosing the imputed rate of return to equity under the ACE.

### **Neutrality Properties of an ACE**

- ACE neutralizes debt-bias. Neutrality is also obtained under an allowance for corporate capital (ACC) system, which eliminates interest deductibility and grants a deduction for the normal rate of return on all capital. This system, however, involves a more significant overhaul of the tax system, and raises transitional issues (e.g. how pre-existing debt will be treated). Moreover, if the notional return is used for both interest receipts and interest paid, it effectively leaves banks untaxed.
- ACE renders the CIT neutral with respect to marginal investment decisions. By allowing a deduction for both interest and the normal rate of return on equity, the ACE charges no tax on projects with a return that matches the cost of capital. The effective marginal tax rate is therefore zero and the CIT becomes a tax on economic rents. Such a tax would, in principle, not distort the scale of investment.

- ACE offsets investment distortions induced by differences between economic depreciation and depreciation for tax purposes. In particular, accelerated depreciation for tax purposes reduces the book value of assets in the tax accounts, thereby also reducing the ACE in later years. This exactly offsets the benefits from earlier depreciation in present-value terms. Hence, the present value of the sum of the depreciation allowance and the ACE allowance is independent of the rate at which firms write down their assets in the tax accounts. Neutrality of an ACE with respect to investment therefore holds, irrespective of the depreciation allowances in the tax system.

### **ACE in Practice**

- From 1994 to 2000 Croatia operated a profit tax charged on equity income in excess of an imputed ‘normal’ return (called the rate of ‘protective interest’, PI). The notional rate of return applied to the book value of equity was equal to 5 percent, plus the rate of increase of industrial product prices. In mid-2000, the overall rate was 11.2 percent. If the PI resulted in a tax loss, it could be carried forward for up to five years—with interest added to it at the PI rate.
- In 1996, Brazil introduced a variant of an ACE by allowing notional interest (JCP) to be deducted from the taxable base, but only if equity returns were paid out to shareholders. The JCP is calculated as the long-term interest rate set by the government multiplied by the net assets of the company. The purpose of the JCP was to ‘equalize the taxation of the many types of capital income’. The JCP is supposed to address also inflationary distortions.
- Between 1998 and 2002, Italy applied a partial variant of the ACE system, called the Dual Income Tax. A notional interest rate on equity was not fully tax deductible, but instead qualified for a reduced CIT rate (of 19 percent instead of the normal 37 percent). The Italian system was of an incremental nature in that only post-reform equity qualified for the lower tax rate. Moreover, the overall tax rate could not fall below a minimum of 27 percent.
- The Belgian ACE is called the ‘deduction for risk capital’ or ‘notional interest deduction’ (NID), and was introduced in 2006. The law stipulates that the NID allows companies to deduct from their taxable income a ‘notional interest’ in the amount equal to the risk capital multiplied by the notional interest rate. The Belgian government intended with the NID to create a positive climate for the development of economic activities. The National Bank of Belgium (2008) shows a spectacular increase in equity of Belgian companies after the introduction of the NID.
- Italy introduced an incremental ACE in March 2012, where the deduction was labeled “aid to growth”, reflecting its primary goal of encouraging Italian businesses

investment, increasing job creation and stimulating economic development. It grants Italian enterprises and Italian branches of foreign businesses a deduction from taxable income corresponding to an assumed 'notional return' on qualifying equity increases, contributed after the fiscal year 2010 ('new equity'). The deduction of notional return is fixed at 3 percent for the first three years of application. For subsequent years, the rate will be determined annually by the Ministry of Finance on the basis of the average return on Italian public debt securities, potentially increased by an additional 3 percent to compensate for business risk. Any notional return that exceeds net taxable income of the relevant year is carried forward and can be used to offset the net taxable income of any subsequent tax period. The ACE applies also to sole proprietorships and partnerships, where an allowance is granted for the entire stock of equity, rather than its increment since 2010. Acquisitions in related companies that could lead to duplication of the allowance are excluded.