Tax and Economic Growth in Austria

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Taxation influences the behavior of economic agents and, as a consequence, a country's economic activity and growth. The nature and size of this impact depends on the object or activity taxed as well as on the tax rate and the design of the tax. In a recent survey of 21 countries, the OECD sets up a ranking of tax categories based on their effects on wealth and GDP growth. This study investigates to what extent this ranking reflects the taxation-growth relationship in Austria. To this end, we compare the Austrian tax structure against the tax structure in the countries posting the highest GDP per capita levels and growth rates. Moreover, we assess the individual tax categories' impact on the key explanatory variables of economic growth. The investigation is based on the central assumption that tax revenues are kept constant and that reducing the revenues from one tax category requires increasing those from another tax source.

The analysis shows that the high level of labor taxes, including social security contributions, negatively affects the growth potential in Austria. The relative share of revenues from property taxes, which, according to the OECD survey, hamper economic growth least, is lower in Austria than in almost all other OECD countries. Although the share of revenues from consumption taxes in Austria is comparable to that in the countries posting the best GDP per capita figures, tax rates are necessarily higher because the Austrian VAT system grants numerous exemptions and has a set of reduced rates.

The substantial reduction of the tax burden on businesses brought about by the 2004/2005 tax reform improved the conditions for economic growth. The low degree of progressivity of taxes on labor income fosters productivity and economic efficiency rather than the redistribution of income.

In economic growth models, the factors capital, education level (human capital) and labor as well as technological level determine an economy's output level and its long-term growth. The relation between taxes and economic growth can therefore be described along all the channels through which taxes affect these input factors: capital taxes influence individuals' decisions to save as well as businesses' decisions to invest and promote innovation. Thus, taxes affect the extent to which enterprises build up their productive capital stock and their level of innovation. Taxes on labor income affect labor demand and supply as well as an individual's decision to invest in education, thereby building human capital.

A recent OECD study on taxation and economic growth[2] indicates that rather than the level of taxation it is the tax mix, i.e. the way tax instruments and categories are designed and combined, which primarily determines the growth potential of economies. Analyzing the data of 21 countries, the OECD sets up a ranking of tax categories which adversely affect economic growth (in descending order). Not unexpectedly, the tax categories directly related to income from capital and labor have the largest negative impact on growth, followed by consumption and

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property, which have a smaller adverse impact.

These results are consistent with recent economic literature. Lee and Gordon (2005) show that higher corporate tax rates have a significantly negative impact on economic growth. Cutting corporate taxes by 10 percentage points would increase growth rates by 1 to 2 percentage points. This relation is less obvious for high income taxes. Djankov et al. (2008) investigate the economic effects of effective corporate tax rates in 84 countries and find negative correlations between this tax category and investment and growth. Feldstein (2008) highlights the adverse effects of income taxes on broadly defined labor supply: changes in labor participation, the number of hours worked, the choice of job, employees' commitment, etc. Altig et al. (2001) calculate the welfare and growth effects of five proposals to reform the U.S. tax system. All five proposals envisage the following measures to strengthen growth: broadening the tax base to finance low taxes on capital and income, taxing existing property and consumption and exempting investment from taxation.

The main objective of this study is to find out to what extent the results of the OECD reflect the relation between the tax structure and economic growth in Austria. To this end we compare the Austrian tax mix with the tax structures seen in the countries showing the highest and the lowest levels and growth rates of GDP per capita. In addition, the study looks at the factors within the individual tax categories which, according to theoretical tax literature and the OECD survey, may impact on the levels and growth rates of GDP per capita.

Since the focus of this paper is on the relation between taxation and growth in Austria, key issues like tax incidence or the overall objective of the tax system (tax incentives, income redistribution, the optimum tax rate) are touched on only briefly or not covered at all.

1 Tax Mix and Economic Growth in the OECD

In the OECD study "Tax and Economic Growth" the authors estimate the effects of individual tax categories on the level of GDP per capita and its short- and long-term growth rates by integrating tax variables in a Solow-Swan growth model.[3] The empirical results of this survey of 21 OECD countries (with data series available for the period from 1971 to 2004)[4] allow a ranking of tax categories by their degree of impact on the level and growth of GDP per capita as follows:

— Property taxes have the least adverse effect on the long-term growth of GDP per capita, followed by
— consumption taxes and
— personal income taxes,
— whereas corporate taxes are the taxes which hamper the level and growth of GDP per capita most severely in the long term.

Box 1 provides a detailed overview of the relation between level and growth of GDP per capita and the individual tax categories as described in the OECD study "Tax and Economic Growth."

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[3] *For details on the model and econometric results, see Annex.*

[4] *Except Western Germany, for which the data series was available only to 1990.*

OECD Working Paper "Tax and Economic Growth"

Property taxes

Property taxation, the category found to be least harmful to growth in the OECD study, takes the following forms: recurrent taxes on land and buildings, taxes on financial and capital transactions, taxes on net wealth and taxes on gifts and inheritances. These taxes − except financial transaction taxes − do not directly affect economic agents' decisions to supply labor, to invest in or to build up human capital and generally share the aim of taxing the relatively wealthy, hence reducing inequality.

Recurrent taxes on land and buildings are not only non-distortionary as regards economic efficiency, but have other advantages as well: their tax base is relatively stable (generating predictable revenues), and they are difficult to evade. Moreover, property taxes can increase the progressivity of the tax system if low-value properties are exempt and the valuation of land and buildings is regularly updated. Due to higher opportunity costs there would be incentives for developing land, which in turn would contribute to an improved allocation of resources. The OECD argues against the favorable tax treatment of owner-occupied housing, as it may distort capital allocation and lead to excessive investment in housing. Also, it may reduce labor mobility, since people have more incentive to keep their homes for a longer period of time. Housing should be taxed in the same way as other investment by taxing the imputed rent and allowing interest deductibility. In most OECD countries, property taxes are levied at lower government levels, which makes it difficult to implement harmonized taxation at the federal level.

According to the OECD, taxes on financial and capital transactions are generally more distortionary than direct taxes on income and services provided by assets. Transaction taxes discourage transactions, which may result in hoarding behavior and the inefficient allocation of resources. Nevertheless, transaction taxes are widely used in financial markets, since they are easier to collect than taxes on capital gains.

Net wealth taxes with an appropriate exemption level (e.g. to foster saving for retirement) can be used to redistribute income and provide tax authorities with information that enables them to identify and correct inconsistencies between income flows and wealth held by taxpayers.

The OECD also concludes that taxes on inheritances and gifts are even less distortionary than wealth taxes given that the uncertain date of death makes most inheritances unplanned and certain decisions regarding a person's wealth are not tax driven. It seems reasonable to have exemptions for small inheritances and to tax primarily large inheritances. A gift tax is considered a reasonable instrument to prevent the avoidance of inheritance tax, the OECD reckons.

Consumption taxes

Consumption taxes are generally VAT or sales taxes, which are applied on a broad range of goods and services. Specific consumption taxes, such as excises and import duties, are applied on a limited number of goods and services.

Since consumption taxes apply the same rate on current and future consumption, their effect on individuals' saving behavior is very limited. Evidence from the literature on the role of tax elasticity of private savings is inconclusive. The effect of consumption taxes on labor supply and demand is comparable with the impact of a proportional income tax: consumption taxes lower the purchasing power of real after-tax wages. If a bargaining system allows income losses to be offset by higher wages, a decline in labor demand can be anticipated (due to higher labor costs). If the tax burden is transferred to individuals, the loss in purchasing power can be compensated for by increased labor supply.

Governments apply differentiated VAT rates for two reasons: first, to support labor by favorable tax treatment (especially of labor-intensive services) and to make leisure activities more expensive and thus less attractive, and second to redistribute income. Corlett and Hague (1953) as well as Christiansen (1984) recommend levying higher taxes on goods and services complementary to leisure (e.g. skis or golf clubs) while giving favorable tax treatment to goods complementary to work (e.g. public transport or child care facilities). Since higher-income earners

tend to consume relatively more of the low-taxed goods and therefore will benefit more from the lower rates than low-income earners (deadweight effect), reduced VAT rates are less suitable for enhancing equity than direct income transfers.

Personal income taxes and social security contributions
Personal income taxes and social security contributions are taxes on labor and can therefore have adverse effects on labor supply and labor demand, and, consequently, on the level and growth of GDP per capita. High average rates discourage labor participation, high marginal rates reduce the number of hours worked. While the tax elasticity of labor supply for prime age men is relatively low, high income taxes considerably discourage women/second earners from taking up work. Social security contributions increase labor costs and can therefore reduce labor demand. At the same time, firms or industries could switch to the use of other, less cost-intensive input factors, which would result in an inefficient allocation of resources.

According to the OECD, a high degree of progressivity is a disincentive to invest in human capital and discourages entrepreneurship, which may have a negative impact on GDP per capita. High marginal tax rates diminish individuals' willingness to take risks; this may reduce productivity especially in industries with high entry rates. At the same time, progressive tax systems contribute to achieving intended redistribution effects, generating a typical equity-efficiency trade-off.
The taxation of personal capital income may reduce the saving ratio; this assumption, however, is uncertain as it lacks empirical support. Taxing profits both at the corporate level and at the personal level (when they are distributed as dividends) without reducing the tax rate can create a bias towards debt financing rather than equity financing.

Corporate taxes
Corporate taxes affect corporate investment by reducing its after-tax return. As a result, fewer investment projects may be implemented due to yield considerations and the capital available for funding potential future investment projects might be reduced. Taxes affect the productivity of industries and enterprises through various channels: changes in relative factor prices can lead to inefficient factor allocation. Complex corporate tax codes can cause high tax compliance costs for firms and high administrative burdens for governments, absorbing resources that could be used for productive activities. High corporate taxes can diminish a location's attractiveness as a target for FDI inflows, which hinders technology transfers to domestic firms and reduces competition. Yet compared with the adverse effect of high taxes on labor, this aspect seems to be of only minor importance. Though tax incentives for investment in research and development are preferable to direct subsidies, empirical evidence shows they are rather inefficient when it comes to enhancing productivity. If interest payments on loans are deductible, high corporate taxes can encourage debt financing and discourage new share issuance.

Empirical evidence obtained at the firm and industry levels shows that highly productive firms are particularly adversely affected by corporate taxes. Small and young enterprises, by contrast, seem to experience less negative impact. One reason is that these enterprises often enjoy favorable tax treatment, while also having a smaller tax base due to lower profits. Firms catching up in productivity are more severely hit by corporate taxes than those which have suffered productivity losses. International tax competition has become a key consideration in many governments' corporate tax policies.

All the negative effects on capital accumulation notwithstanding the OECD considers corporate income taxes to be a crucial part of a tax system which can prevent personal income from being declared as (tax-advantaged) corporate income.

The empirical results of the OECD study suggest that tax systems relying primarily on property and consumption taxes provide a better environment for growth than tax systems with a strong focus on personal and corporate income

taxes. Therefore, a tax reform shifting the bias from corporate and personal income taxes to consumption and land taxes (the latter being the least distortionary type of property taxes) would be most advantageous for growth.

At this point it should be noted that the OECD's approach in this survey – comparing the shares of individual tax categories in total tax revenues – aims to illustrate the effects on wealth and growth generated by trade-offs between individual tax categories. A small share of corporate taxes in total tax revenues in a country does not necessarily imply, however, that the tax burden for businesses in this country is low. A small share of corporate taxes may also be due to an economy's structure with fewer corporations liable for this tax. Section 2.5 shows that effective tax rates are a more appropriate measure for comparing the tax burden in different countries.

To what extent tax reforms impact on growth is difficult to assess. Changes in one single tax usually feed through to several factors determining the level and growth of GDP per capita, which may generate mutually offsetting effects. Reducing personal income taxes, for instance, has a positive impact on labor supply, as people would find it more attractive to give up leisure time in exchange for higher net wages and salaries. If there is sufficient labor demand, more labor supply generates more wealth and growth. At the same time, higher net wages increase the opportunity costs of investment in education (i.e. wage losses during periods of education) while lowering the incentive to build up human capital. As a result, productivity declines as does GDP per capita growth.

Under the assumption that a tax reform is revenue neutral, cutting one tax requires raising other taxes. Hence,

it does not suffice to analyze changes in individual taxes separately to assess the overall effect of a tax reform on GDP growth.

Finally, the impact of a tax reform cannot be assessed without taking into account other national policy areas and institutions. Cutting personal income taxes will generate positive supply effects in the labor market only if wage formation works efficiently and the price of labor contains information on supply and demand preferences. Apart from the structure and the level of income taxes, other institutions influencing labor market access, such as labor rationing, insider-outsider behavior or high minimum wages (which limit the demand for low-productivity labor), play an equally if not more important role in this context.

2 The Tax-Growth Relation in Austria

With a tax-to-GDP ratio of 41.8%, Austria is often referred to as a high-tax country. Austria takes eighth place in a tax burden ranking of OECD countries and seventh place in a comparable EU ranking (2008); Sweden and Denmark, posting tax-to-GDP ratios of some 50% each, head both lists. Against this background, designing the structure of government revenues so as to maximize efficiency is particularly important in Austria.

2.1 Austria's Tax Structure in International Comparison

The structure of the Austrian tax system is characterized by a high fiscal burden on labor. In particular, social security contributions – rather than personal income taxes – account for a high share of total tax revenues. In addition, payroll taxes, contributing more than 6% of total revenues (the highest share among OECD countries),

weigh heavily on labor. Next to labor income, consumption is a key source of tax revenues. The taxation of corporate profits, immobile factors and property, by contrast, accounts for a comparably small proportion of total tax revenues in Austria.

Chart 1 illustrates the Austrian tax mix and its evolution over the past three decades. Structural changes took place primarily in three areas: First, the share of revenues from the taxation of goods and services has been reduced continuously since the 1970s. Second, revenues from property taxes have declined; and third, the share of social security contributions in total revenues has increased. The relative amount of revenues from personal income and corporate taxes has remained broadly unchanged. The most striking difference to the OECD average is the comparatively small proportion of corporate and property taxes in Austria: While the OECD average share of corporate income taxes in total tax revenues is 10%, the corresponding Austrian figure is only 5%. By contrast, Austria posts a much higher share than the OECD average when it comes to revenues from social security contributions

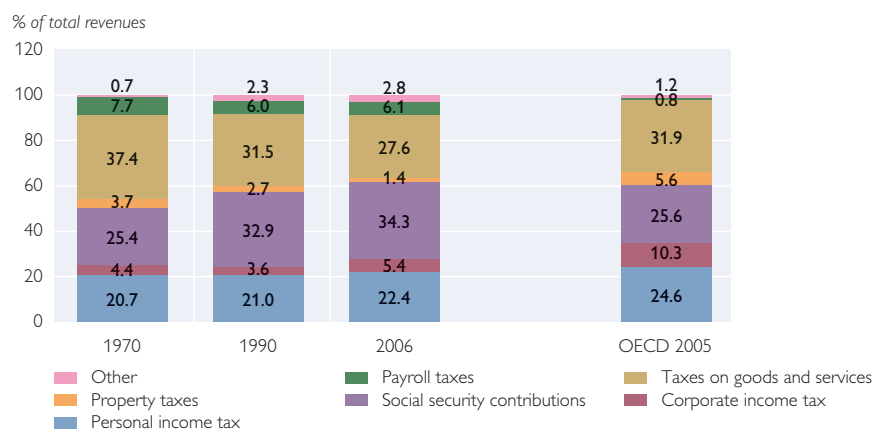(34% versus 25.6%). This portion surged between 1970 and 1990 and subsequently grew more slowly.

According to the OECD tax ranking, the small proportion of revenues from corporate taxes in total tax revenues in Austria can be considered an advantage, whereas the low taxes on property and the high fiscal burden on labor (due to the high level of social security contributions) represent a disadvantage.

Chart 2a depicts the tax structure in the countries with the highest levels of GDP per capita in the OECD in 2006 (Luxembourg, Norway, the U.S.A. and Ireland). At an average of 5.2%, Ireland (followed by Korea and Slovakia) also posted the highest annual growth rates of GDP per capita. Austria came in ninth in an OECD comparison of per capita GDP level in 2006, recording average GDP growth rates of annually 1.9% between 1990 and 2006.

Interestingly, corporate income taxes and property taxes are a considerably larger source of government income in countries with the highest GDP per capita levels and growth rates than they are in Austria. This differ-

Chart 1

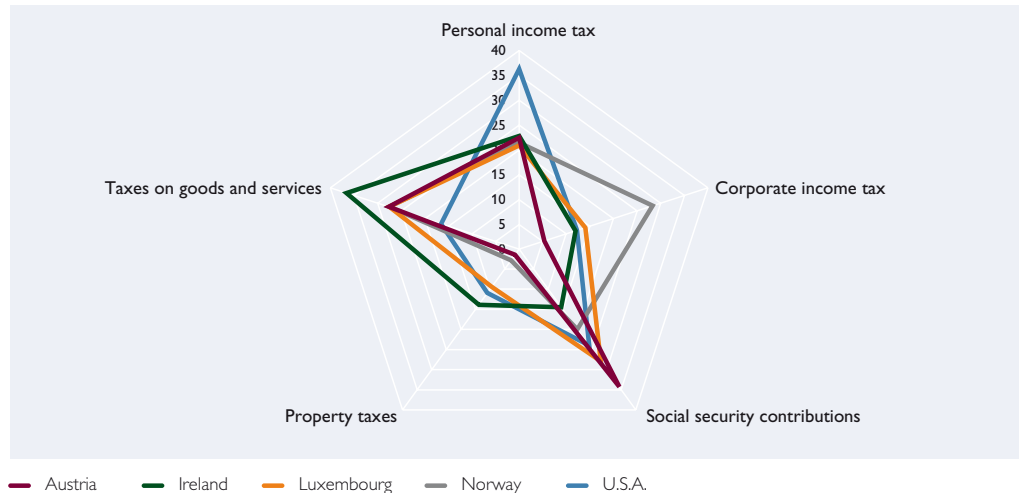**Tax Structure in Austria (1970, 1990, 2006) and the OECD (2005)**

% of total revenues

	1970	1990	2006	OECD 2005
Other	0.7	2.3	2.8	1.2
Payroll taxes	7.7	6.0	6.1	0.8
Taxes on goods and services	37.4	31.5	27.6	31.9
Property taxes	3.7	2.7	1.4	5.6
Social security contributions	25.4	32.9	34.3	25.6
Corporate income tax	4.4	3.6	5.4	10.3
Personal income tax	20.7	21.0	22.4	24.6

Source: OECD.

**Tax Structure in Austria and the OECD Countries with Top GDP
per Capita Levels and Growth Rates (2006)**

% of total tax revenues

Source: OECD.

**Tax Structure in Austria and the OECD Countries with Top GDP
per Capita Levels and Growth Rates (2006)**

% of total tax revenues

Source: OECD.

ence cannot be attributed directly to the levels of tax rates (at 12.5%, the tax rate on corporate profits in Ireland is exactly half as high as in Austria), but rather to a country's economic structure (i.e. the share of corporations liable for corporate tax), the breadth of the tax base as well as cyclical evolutions of corporate profits. In addition, the level of social security contributions is far higher in Austria than in any of these high-performing countries. The

level of relative consumption tax revenues in Norway and Luxembourg corresponds to the Austrian level. The U.S.A. is the only OECD country without a VAT; therefore its tax revenues from consumption taxes are relatively modest. In Ireland revenues generated by VAT and excise taxes have been soaring since 2001 thanks to a buoyant economy. This is also why personal income tax revenues – also the main source of government revenues in the U.S.A. – have increased markedly in Ireland over the past few years.

Turning to the countries posting the weakest wealth and growth figures (Chart 2b), it appears that Poland (with the third lowest level of GDP per capita) and Japan (with the third lowest growth of GDP per capita between 1990 and 2006) levy high social security contributions on a par with Austria. Similarly, Poland and Turkey (showing the lowest level of GDP per capita) record revenues from corporate taxes that are about as low as those in Austria. Austria's revenues from property taxes are below and its revenues from income taxes are above the levels recorded in Poland, Japan and Turkey. It is interesting to note that the degree of income tax progressivity in Japan and Turkey is very low.

These empirical comparisons suggest that the tax-growth relationship follows a certain pattern: high-performing countries record high revenues from corporate, income and property taxes, while levying rather modest social security contributions. It seems likely, however, that the amount of revenues from individual tax categories is the consequence rather than the cause of buoyant growth.

In countries with a low income level like Poland or weak per capita GDP growth like Japan, the share of social security contributions in total tax revenues is fairly large or consumption tax revenues are an important source of income (Turkey and Poland). The low revenues from income and corporate taxes in Poland and Turkey are not only attributable to a low wage level and low corporate profits, but also to very low tax rates and – to a certain extent – the significance of the informal sector.

A thorough analysis of the structures within the individual tax categories seems to be key to a clearer picture of the relation between taxes and growth in Austria.

2.2 Property Taxes

The OECD (2008) identifies property taxes as the tax category with the smallest negative impact on growth. This is due to a tax base which is comparatively stable and not directly linked to the production factors labor, capital and human capital. Since there is a close relation between income levels and financial wealth, for which there is also evidence in Austria (Beer et al., 2006; Fessler et al., 2008), taxes on property contribute to equity through desired redistribution effects. Why is it that Austria only collects 1.3% of its total tax revenues from property taxes (OECD: 5.5%, EU-15: 5.3%), bringing up the rear (together with the Czech Republic) among OECD countries?

The most important property taxes in Austria are land taxes, inheritance and gift taxes and capital transactions taxes. Until its abolition in 1994, wealth taxes used to be the most important source of revenue in this tax category (chart 3). The share of property taxes in total tax revenues has been declining since the 1970s. This trend is attributable not only to very low tax rates, but also to the fact that the tax base has not been adjusted to market values (which concerns, e.g., the assessed value of property, which serves

Chart 3

Property Taxes (1970 to 2006)

% of total tax revenues

Source: OECD.
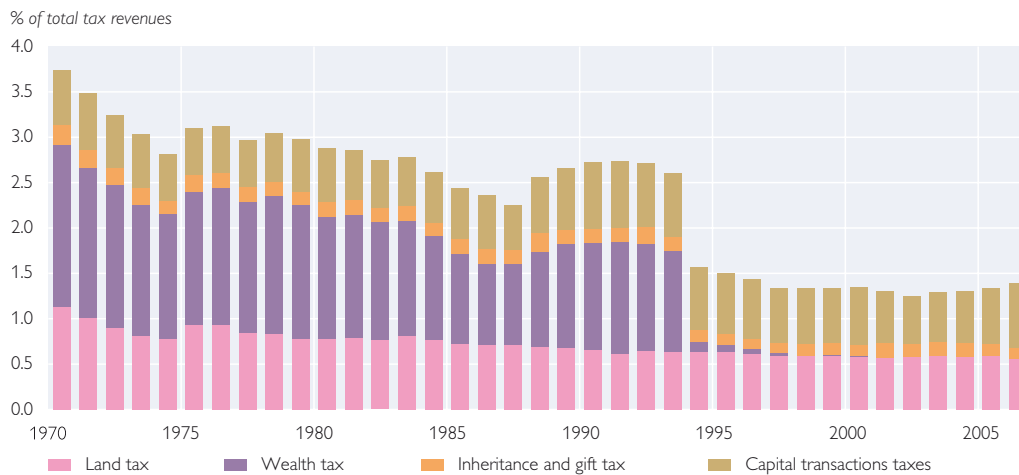
as the basis for calculating land tax), generous exemptions (e.g. substantial tax allowances for corporate successions) and, in particular, the gradual repeal of various capital transactions taxes, including the trade capital tax, the securities tax, the tax on stock transactions and, most recently, the abolition of inheritance and gift tax.

In addition, property taxes raise questions of political economy, since they are extremely unpopular among the general public. According to a 2007 poll, 84.2% of Austrians were for and 9.6% against abolishing the inheritance tax; 6.2% did not have an opinion.[5] These results are quite surprising, given that the majority of Austrians is – if at all – only marginally affected by inheritance taxes. According to the Austrian tax statistics, 65,449 inheritances were recorded in 2006, yielding a total of EUR 103.1 million in tax revenues. In 96.1% of all cases, the amounts bequeathed were below EUR 58.400.

61% of inheritance tax revenues were levied on only 3.9% (or 2,566) of all inheritances.[6] In other words, inherited wealth and therefore inheritance taxation have an impact on a very small proportion of the Austrian population only.

After the Constitutional Court had ruled that the inheritance and gift tax legislation needed to be amended, parliament repealed this highly unpopular tax altogether in the summer of 2008. This step seems questionable not only because of the EUR 155 million losses (2007) in tax revenues but also for reasons of economic efficiency and in light of the generally very low level of property taxes in Austria. In addition, repealing a tax on inheritances and gifts is in sharp contrast to the findings of traditional and recent economic literature. Atkinson and Stiglitz (1976) describe inheritance and gift taxes as instruments to offset the unequal distribution of wealth between high- and low-income earners. Heer (2000) shows

[5] Poll by Marketing Data, quoted from
http://orf.at/070311-10070/?href=http%3A%2F%2Forf.at%2F070311-10070%2F10071txt_story.html

[6] Response to a parliamentary inquiry dated November 12, 2007, by Minister of Finance Wilhelm Molterer (http://www.parlament.gv.at/PG/DE/XXIII/AB/AB_01441/imfname_092096.pdf).

that the introduction of an inheritance tax both increases overall welfare and enhances the equal distribution of wealth. Brunner and Pech (2008) conclude that the act of bequeathing or giving something away is made for the joy of giving and should therefore see a tax treatment like the consumption of a good. The question of how inheritance and gift taxes impact on growth has already been described in the summary of the OECD study above.

Another aspect limiting the room for maneuver in designing property taxes is the fact that revenues in this tax category (in particular from land taxes) are a major source of funding for local authorities. While the federal government can set a uniform tax base for the land tax, it is up to the local communities to vary tax parameters within a certain range. Unless these powers are reorganized, there will be no uniform taxation of land at the federal level in Austria. Moreover, with land taxes being so unpopular, proposals to adjust the tax base of land taxes to market values are likely to meet considerable opposition.

Despite the difficulties that may be encountered, the economic reasons described above advocate a shift towards property taxes in the Austrian tax mix. Apart from adjusting existing taxes, policymakers could learn from other countries' experience, for instance with the taxation of owner-occupied housing through imputed rents, the capital gains taxation, etc. Allowances can help avoid hardships and potential liquidity shortages.

2.3 Consumption Taxes

According to the optimal taxation theory, differentiated consumption tax rates for various categories of goods (to support consumers with low incomes and to promote the consumption of goods and services complementary to labor) can be beneficial to the tax-growth relation. Some EU countries apply reduced tax rates on labor-intensive services in the low-skill segment (i.e. locally supplied services, for instance in hotels and restaurants). This is a way to prevent the workforce providing these services from drifting into the shadow economy and to increase the demand, and hence wages, for low-skilled workers. The empirical results of a study by the European Commission and Copenhagen Economics (2007) however show that reducing VAT rates for labor intensive services did not achieve the desired effects in some EU countries.

Austria applies a standard VAT rate of 20% as well as reduced rates of 10% (on food, passenger transport and services provided by hotels, restaurants and artists) and 12% (on the supply of wine of the winemaker's own production). The – very long – list of goods and services exempt from VAT is incorporated in Article 6 of the Turnover Tax Act (and includes exports, cross-border transport and public services like education, hospital services or postal services).

One measure of the quantitative significance of VAT exemptions and reduced tax rates is the C-efficiency[7] (chart 4). The higher the C-efficiency

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[7] *The C-efficiency is the result of contrasting effective tax rates (actual revenues from turnover tax/consumption)*

with statutory tax rates $C\text{-}efficiency = \left[\dfrac{\left(\dfrac{rev_{VAT}}{C}\right)100}{t_{VAT}} \right] 100$

Chart 4

C-Efficiency of VAT (2005)
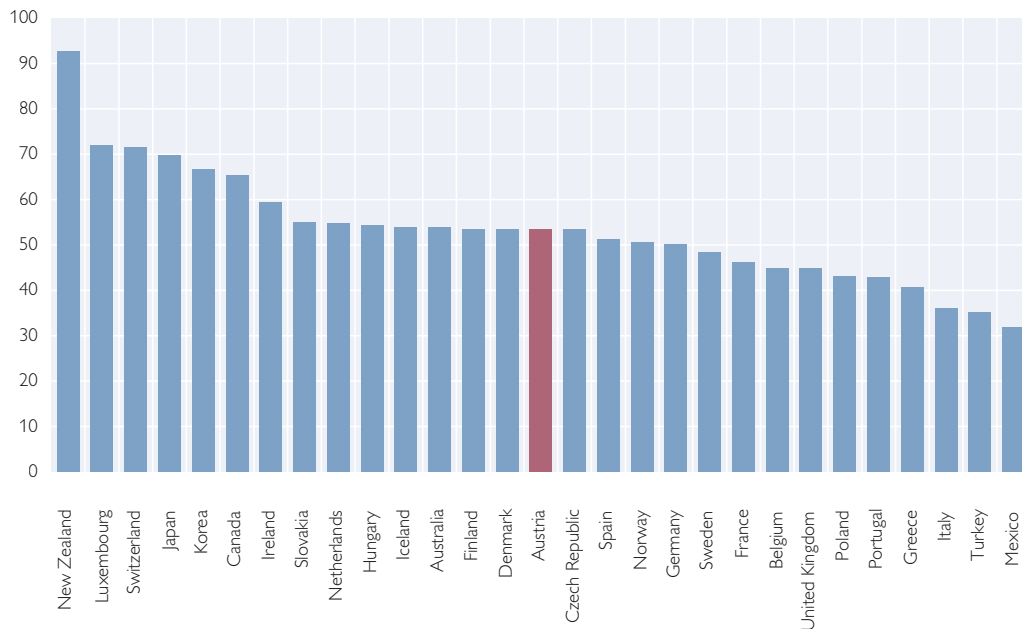
Source: OECD.

of a VAT system, the smaller the number of loopholes and the smaller the importance and number of reduced tax rates. According to this calculation, Austria collects only 53% of potential revenues from VAT, ranking in the middle range among OECD countries. New Zealand achieves a C-efficiency of 92.7%; the tax system in New Zealand offers almost no exemptions and yields a higher share (33%) of total tax revenues from the Goods and Services Tax (GST) than Austria (28%), although at 12.5%, the statutory GST tax rate is markedly lower than the average VAT rate in the OECD.

The European Commission and Copenhagen Economics (2007) conclude that uniform tax rates on consumption are preferable to different rates because of lower administration costs and the ambiguous effects that may be generated by excessively differentiated tax rates. Other instruments (transfer pay-

ments, direct taxes, direct subsidies) are usually more effective than reduced VAT rates in achieving welfare objectives. Moreover, reduced tax rates need to be financed, an aspect warranting due attention in the tax incidence analysis.

2.4 Personal Income Taxes and Social Security Contributions

Taxes based on labor, such as personal income taxes or social security contributions (and other payroll taxes) impact on growth by affecting the supply of and the demand for labor as well as the level and growth of productivity. Handler et al. (2005) provide a comprehensive overview of the literature, which confirms the channels identified by the OECD (2008) through which income taxes impact on economic growth: Highly progressive income tax systems, i.e. systems in which the average tax rate rises markedly together

with taxable income, can provide disincentives and dampen labor supply. Excessively high marginal tax rates reduce the amount of hours worked, very high average tax rates discourage labor market participation and moreover involve the danger of labor drifting into unemployment or the informal sector. The groups most affected are low-skilled workers, young as well as older people and second income earners (usually women), whose labor supply elasticity is high with respect to income taxes. While it is usually employees who bear the burden of higher income taxes through lower net wages, higher wage demands may be accepted in times of low unemployment, which in turn can reduce the demand for labor.

One channel through which tax systems affect an economy's productivity level and growth is the impact on incentives to build up human capital. The prospect of higher income after obtaining a diploma is the main reason for people to invest in education.[8] According to Boarini and Strauss (2007), an additional year of tertiary education can be expected to yield on average an additional 8% in income. High income taxes, however, reduce these income prospects and therefore discourage investment in education. At the same time, a high tax level lowers the opportunity costs of such investment, that is, the forgone net income reduced by high taxes. The former effect seems to be more important than the latter, therefore it can be concluded that high income taxes are negatively correlated with investment in education.[9]

Entrepreneurship is another channel through which income taxes affect productivity. Corporate taxation (which will be discussed in section 2.5) plays the biggest role in this context, but income taxes also exert a certain influence. The higher income tax progressivity, the smaller the incentive for entrepreneurs to invest in riskier projects.[10] At the same time, a particularly high degree of progressivity can generate incentives to switch from employment to entrepreneurship, either by founding an enterprise liable for corporate income tax or by registering as self-employed liable for income tax with a broader range of tax credits and deductions.[11]

The question of whether the complete absence of progressivity in income taxation would generate employment and efficiency gains is answered best by taking a closer look at flat rate taxes. Fuest et al. (2007) used a simulation based on microdata to assess the distribution, efficiency and employment effects generated by the introduction of a flat tax in Germany. The results show that inequality would increase to a lesser extent, the higher the chosen level of the tax allowance and the higher marginal tax rates. High marginal tax rates would lead to negative employment effects, however. If the tax allowance and marginal tax rate levels were low, there would be employment gains, but almost exclusively in the upper two income deciles. The authors underline that these results have wider applicability beyond Germany.

The progressivity of the Austrian tax systems has to be analyzed in several steps: there are four income tax brackets with marginal tax rates of 0% (for income up to EUR 10,000), 38.333%

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[8] *See Zagler and Dürnecker (2003).*

[9] *See Heckman (1976).*

[10] *See Gentry and Hubbard (2002).*

[11] *See Long (1982) and Blau (1987).*

(EUR 10,000 to EUR 25,000), 43.596% (EUR 25,000 to EUR 51.000) and 50% (above EUR 51,000), respectively. What is unique by international standards is the favorable tax treatment of "other earnings" as described in Article 67 of the Income Tax Law (the so-called 13th and 14th monthly wages/salaries and rewards). Since earners of all income classes are treated equally as regards the taxation of the 13th and 14th salaries, high-income earners save more in taxes; calculated over a period of 14 months, income tax progressivity decreases. An employee in a senior position with an annual gross income of EUR 81,500 saves EUR 4,000 in taxes due to the low rate applied to the 13th and 14th salaries. A low-wage earner, on the other hand, with an annual pay of EUR 13,000 before taxes does not benefit from this tax advantage at all. Put differently, thanks to the favorable treatment of the 13th and 14th salaries, the effective marginal tax rate in the first tax bracket decreases by only 4.59

percentage points, while the same rate in the highest income bracket decreases by 6.29 percentage points.

Social security contributions account for the largest share (34%) of total tax revenues, with employers contributing 16%, employees 14% and self-employed the remaining 4%. This share started to increase gradually after 1970 and reached a peak (36%) in 1995; since then, the proportion of social security contribution in total tax revenues has been declining slowly.

The uniform (income-independent) employees' contribution rate of 18.07% combined with a maximum contribution limit at a monthly gross income of EUR 3,930 make the curve of the income tax ratio which includes social security contributions visibly flatter than the curve of the income tax ratio excluding social security contributions (chart 5). These curves illustrate that the Austrian social security contribution system is indirectly regressive.

Chart 5

Income Tax Ratio (Including and Excluding Social Security Contributions)

% of gross income

Gross wages (EUR 1,000)

Income tax ratio (including social security contributions) ——— Income tax ratio (excluding social security contributions)
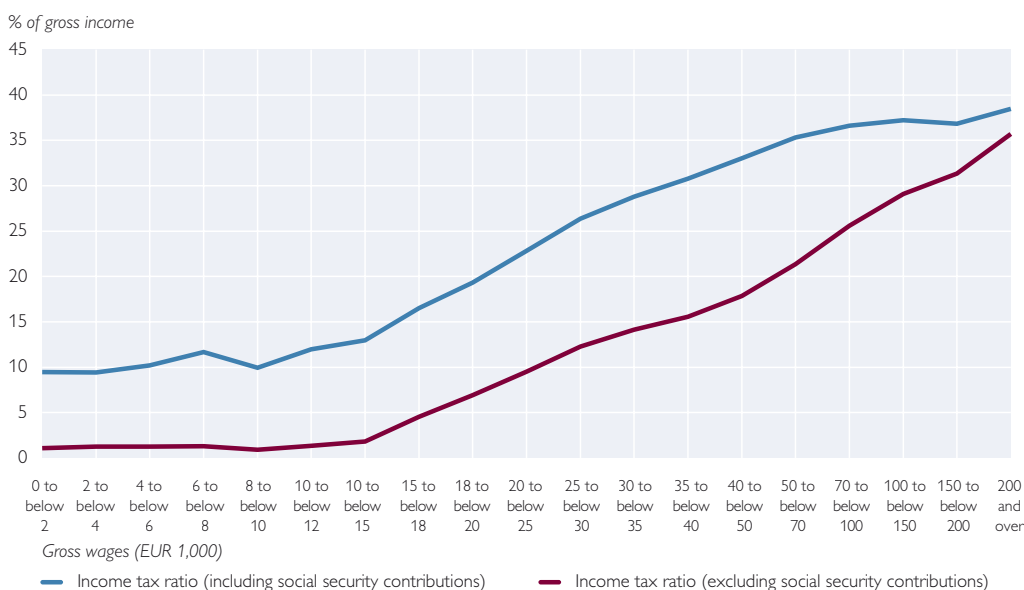
Source: Statistics Austria, author's calculations.

At this point it should be noted that proposals for changes in the structure and level of social security contributions in Austria must always be made with a view to maintaining revenue neutrality; in other words, reducing social security contributions must go hand in hand with tapping other sources of funding. European countries like Denmark, Iceland, Ireland or Switzerland use taxes to fund a large part of their welfare systems. New Zealand and Australia do not levy social security contributions at all; their welfare systems are fully tax-funded. In Austria, structural improvements, such as eliminating the earnings cap or introducing a progressive contributions scheme, could help to offset these regressive impacts – even without going as far as shifting the funding of the welfare system towards increased tax funding.

The degree of income tax progressivity in Austria corresponds to the OECD average. A progressivity indicator can be calculated on the basis of the difference between the respective tax burdens of two single earners without children, one earning 67% of the average income and the other 167%; the higher the indicator, the higher the degree of tax progressivity.[12]

Chart 6 shows that the income tax progressivity indicator in Austria declines when social security contributions are factored in. A larger regressive effect generated by social security contributions than in Austria can be

Chart 6

Progressivity of Income Taxes and Social Security Contributions (2007)

Progressivity indicator

Income tax ■ Income tax and social security contributions

Source: OECD Taxing Wages (2007), author's calculations.

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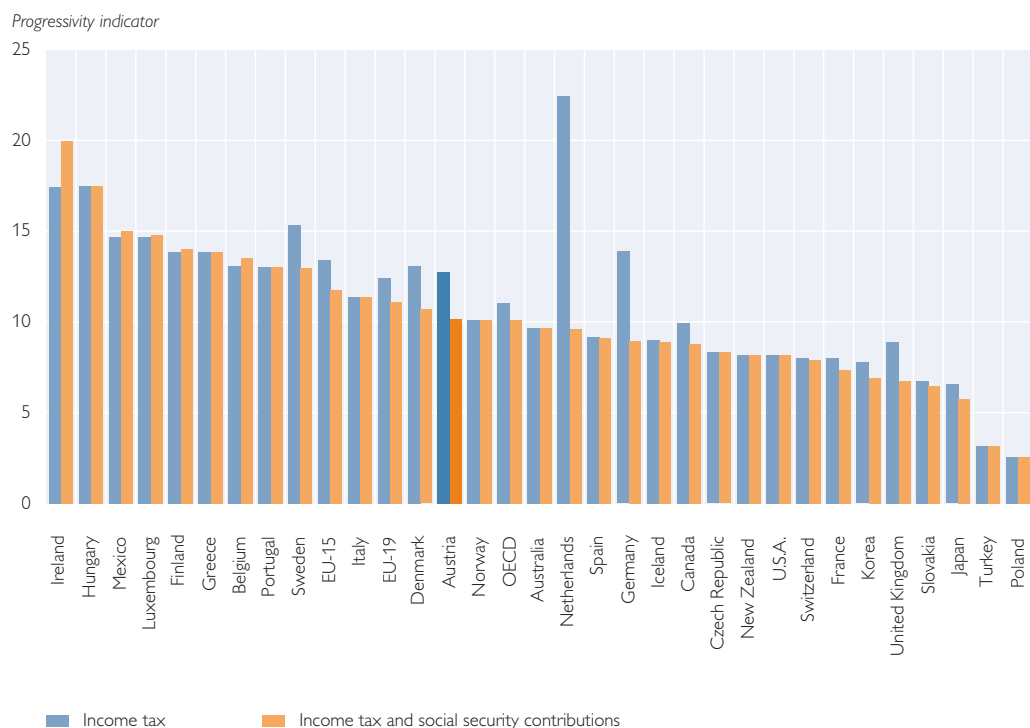
[12] *The calculation of these indicators is based on the income and tax figures provided by OECD Taxing Wages 2007.*

observed only in the Netherlands and Germany.[13] The tax burden of average earners is highest in Germany (42.8% of income before taxes), Austria ranks sixth (33.5%) in the OECD.

Inconclusive findings of economic theory on the effect of tax progressivity on labor supply and demand as well as the empirical data depicted in chart 6 show that the progressivity of income taxes is not a major obstacle to economic growth in Austria. Rather, the high level of social security contributions is a substantial burden on labor that adversely affects potential output growth.

2.5 Corporate Taxes

Corporate taxes impact on growth by reducing the return on capital accumulation, which represents a key factor in the production function. As taxes weigh on corporate profits, pre-tax returns must be higher in order to make investments profitable. Increasing cost of capital prompts a shift in relative factor costs (making labor comparatively cheaper); therefore, owing to the substitution effect, raising taxes on capital can boost employment in the short term and (by fueling labor demand and wages) provide an additional incentive for investment in education.[14] Slower growth due to low investment and a diminishing capital stock, however, can suspend this employment effect in the medium term.

Owing to increasing capital mobility, international tax competition has become an issue in corporate tax policies.

Statutory corporate tax rates in the EU-27 were cut by 10.6 percentage points on average between 1995 and 2008.

The European Commission (2008) calculates implicit corporate tax rates on the basis of actual revenues from this tax and a potential tax base.[15] Implicit tax rates reflect enterprises' actual tax burden by international standards more accurately than statutory tax rates, since first, the way the tax base is defined varies from country to country and, second, numerous exemptions and deductions distort the picture. The implicit rate of corporate taxation in Austria is 21.6%, which puts Austria among the lower middle range of a ranking of EU countries (chart 7).

Delivering substantial tax relief for enterprises, the tax reform package that took effect in 2005 included not only the reduction of the corporate tax rate from 34% to 25% but also the introduction of group taxation. The latter enables groups of corporations to offset losses incurred by an individual corporation within the group against the profits of other corporations of the same group. Since the extension of a group beyond Austrian borders is allowed by the new tax legislation, losses incurred by a group affiliate abroad can also be offset against the overall group's profits; this arrangement is extremely generous by international standards.

First empirical evidence shows that these tax incentives have resulted neither in higher growth rates of gross

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[13] In the Netherlands this effect is due to a maximum contribution limit at a gross income of EUR 30,015 (covering the first two income tax brackets); no contributions are levied for the parts of incomes beyond this threshold. In addition, a part of social security contributions are paid as fixed amounts per person. In Germany there are different maximum contribution limits in place for different parts of social insurance, ranging from gross incomes of EUR 42,750 EUR (health insurance) to EUR 63,000 (unemployment insurance).

[14] This applies solely to industries where the complementarity between labor and capital is not too strong and substitutability is given.

[15] Including only those EU countries for which data were available.

Chart 7

Implicit and Statutory Corporate Income Tax Rates (ITR and CIT)
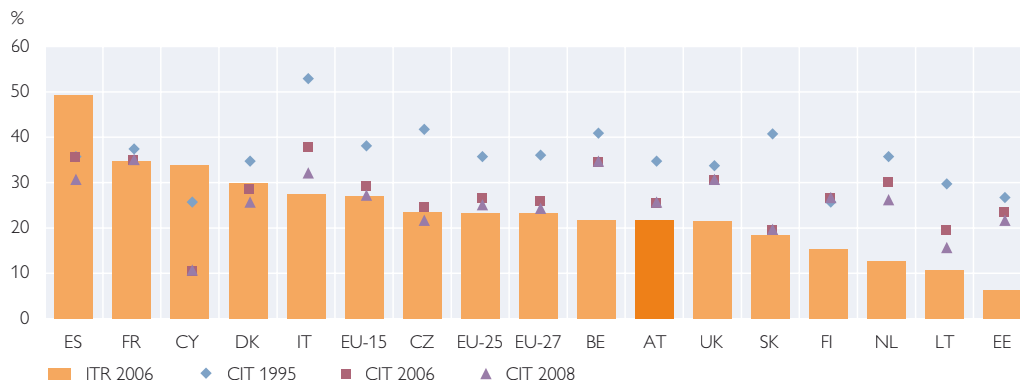
Source: European Commission.

investment nor in a reduction in corporate tax revenues since the reform took effect in 2005.[16] This suggests that the corporate tax rate in Austria is an important but not a critical factor in investment decisions. Instead, investment and corporate tax revenues seem to be the result rather than the cause of the international and national business cycle and aggregate demand.

The Austrian tax system promotes corporate innovation by offering a set of instruments (also for small companies liable for personal income taxes only), including a tax credit and a subsidy for R&D as well as (since 2005) subsidies for contract research, which is of particular importance to small and medium-sized enterprises. Although these measures can stimulate Austrian enterprises' productivity, the results of OECD (2008) show that the effects of R&D tax incentives on productivity and growth are quantitatively rather low.

The low level of corporate taxation in Austria, both in terms of its share in total revenues and by international standards (in terms of implicit tax rates), the SME-dominated structure of the Austrian economy and the fact that the majority of Austrian enterprises do not operate at the technological frontier[17] show that further corporate tax relief would not provide additional momentum to economic growth in the short term.

3 Conclusion

The purpose of this study is to identify the channels through which taxes impact on economic growth and to find out, against this background, to what extent the Austrian tax system is conducive to growth. The results of an OECD (2008) study on the relationship between taxes and growth in 21 countries and the analysis of the individual categories in the Austrian tax

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[16] Gross fixed capital formation advanced by 1.8% on average in 2004 and by 1.5% after the implementation of the tax reform in 2005. One major factor in this development is the rise in corporate financing costs recorded since 2005. Corporate tax revenues inched up somewhat after the tax reform took effect in 2005 (by a monthly average of EUR 419 million between January 2005 and June 2008 vs. a monthly average of EUR 371 million between January 2002 and December 2004).

[17] According to the OECD (2008), empirical firm-level results show that especially young and small enterprises are hardly affected by corporate taxes. Corporate taxes are a heavier burden for businesses in an intense technological catching-up or development process rather than for businesses with medium or low productivity and technology levels.

system show that the domestic tax mix could be improved to enhance the growth potential in Austria.

The growing reluctance in Austria to tax sources other than labor and capital should be abandoned. A shift in the tax base towards property taxes seems desirable. Against this background, the OECD recommends in its 2007 Economic Survey on Austria that the repeal of the inheritance and gift tax be reconsidered.

The high tax burden on labor hampers potential output growth. The high level of social security contributions and payroll taxes keeps nonwage labor costs high, weighing heavily on the Austrian economy. The progressivity of personal income taxes, which is rather low by international standards, has not been found to be a major impediment to the economic potential in Austria – neither does it substantially contribute to the objective of social equity.

The 2004/2005 tax reform has delivered substantial tax relief for the corporate sector. According to the OECD's ranking of taxes on the basis of their impact on growth, these measures represent a step in the right direction. However, by international standards, Austria's revenues from the taxation of corporate profits are significantly lower than those of the countries with the highest GDP per capita levels.

Awareness of the tax/growth relation is analytically important. However, it does not provide a sufficient basis to establish a final set of recommendations on how to reform a tax system. The design of a tax system must take into account not only the impact of taxes on growth but also other objectives such as the required amount of fiscal revenues, income distribution effects or fiscal incentives. The question of how much weight should be attached to each of these objectives is a matter of political judgment. In this respect, the findings on the growth effects generated by individual tax categories can provide a valuable analytical input to this process of political judgment.

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Annex: Econometric Estimates Used in the OECD Working Paper "Tax and Economic Growth"

The OECD paper starts from a standard production function on the basis of a Solow-Swan model, with output (Y) and the production factors capital (K), human capital (H) and labor (L) as inputs and the level of technological and economic efficiency (A(t)). A(t) comprises both the exogenously given technological progress on the one hand and economic efficiency, which is affected by institutions and public policies, on the other hand.[18] The production function takes the Cobb-Douglas form as follows:

$$Y(t) = K(t)^\alpha H(t)^\beta (A(t)L(t))^{1-\alpha-\beta} \quad (1)$$

The approach chosen by the OECD is consistent with both standard growth theory, which assumes technological progress to be purely exogenous, and the assumptions of the endogenous growth theory postulated by Romer (1990) and Lucas (1988). The endogenous growth models either assume rising economies of scale of certain factor combinations or consider technological progress through investment in human capital, research and development, innovation and learning by doing to be an endogenous process. In endogenous growth models, economic policy can influence not only the output level but also long-run growth rates of GDP through the promotion of investment and innovation.

The model estimated by the OECD comprises a convergence component with parameter Φ (first line in equation (2)) and a level component with the short-term variation coefficient (b_s) (second line in equation (2)). The tax variables are included in the equation as vectors.

$$\Delta \ln y_{i,t} = -\phi_i \left(\ln y_{i,t-1} - \theta_1 \ln s_{i,t}^K - \theta_2 \ln h_{i,t} + \theta_3 n_{i,t} - \sum_{j=4}^{m} \theta_j \ln V_{i,t}^j - a_{m+1} t_i - \theta_{0,i} \right) +$$
$$+ b_{1,i} \Delta \ln s_{i,t}^K + b_{2,i} \Delta \ln h_{i,t} + b_{3,i} \Delta n_{i,t} + \sum_{j=4}^{m} b_{j,i} \Delta \ln V_{i,t}^j + \varepsilon_{i,t} \quad (2)$$

Assuming constant tax revenues and depicting the different tax categories as proportions of total tax revenues makes it possible to show trade-offs between tax categories by omitting individual tax variables in different rounds of estimations. If consumption taxes are left out, for instance, the income tax coefficient will show by which amount GDP per capita would increase/decrease in the long term if the tax base were shifted from consumption taxes towards income taxes.

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[18] See Cellini (1997).

The estimates for 21 OECD countries[19] for the period from 1971 to 2004 yield the following results:

Table 1

The estimated empirical model is:

$$\Delta Iny_{it} = -\Phi_i(Iny_{it-1} - \Theta_1 Ins^k_{it} - \Theta_2 Inh_{it} + \Theta_3 n_{it} + \sum \Theta_j InV^j_{it} - a_{it}) + b_{1i}\Delta Ins^k_{it} + b_{2i}\Delta Inh_{it} + b_{3i}\Delta n_{it} + \sum b_{ji}\Delta InV^j_{it} + \varepsilon_{it}$$

Dependent Variable: Log GDP p.c.	(1)	(2)	(3)	(4)
Baseline Model				
Physical Capital	0.18*** (0.05)	0.25*** (0.05)	0.18*** (0.05)	0.16*** (0.05)
Human Capital	1.19*** (0.13)	1.30*** (0.12)	1.18*** (0.13)	1.40*** (0.11)
Population Growth	−0.08*** (0.01)	−0.08*** (0.01)	−0.07*** (0.01)	−0.07*** (0.01)
Control variable				
Overall Tax Burden Total revenues/GDP	−0.27*** (0.05)	−0.24*** (0.05)	−0.26*** (0.05)	−0.22*** (0.04)
Tax structure variables				
Income Taxes	−0.98*** (0.20)			
Personal Income Taxes		−1.13*** (0.19)		
Corporate Income Taxes		−2.01*** (0.32)		
Consumption & Property Taxes			0.93*** (0.20)	
Consumption taxes (excl. property taxes)				0.74*** (0.18)
Property taxes				1.45*** (0.43)
Observations	696	675	696	696
Revenue-neutrality achieved by adjusting	Cons. & Prop. Taxes	Cons. & Prop. Taxes	Income Taxes	Income Taxes

In the estimated model, y refers to output per capita, s_{it} to the investment rate into physical capital, h to human capital, n to the population growth rate, respectively. The vector V contains a set of policy variables. All equations include short-run dynamics, country-specific intercepts and country-specific time controls. Standard errors are in brackets. *: significant at 10% level: ** at 5% level; *** at 1% level.

[19] AU, AT, BE, CA, CH, DE, DK, ES, FI, FR, UK, GR, IE, IT, JP, NL, NO, NZ, PL, SE, US.