





## 1 Introduction

While corporate tax rates in the European Union have fallen since the early 1980s, the share of corporate tax revenue in GDP has increased during this period. Some explanations have been put forward for these diverging developments. For instance, policy reforms have been accompanied by a broadening of the tax base, which made up for the revenue loss from tax rate reductions. Yet, while base broadening policies may indeed explain part of corporate tax rate-revenue paradox, it is unlikely to be complete.

This paper explores other explanations for the broadening of the corporate tax base that has occurred parallel to the lowering of tax rates. In particular, the reduction in corporate tax rates may have encouraged a shift of income from the personal towards the corporate tax base. One such response is through increased entrepreneurship. Indeed, to the extent that a lower corporate tax rate encourages people to become entrepreneur instead of employee, income will be shifted from labour income towards entrepreneurial income. This may broaden the corporate tax base. A second type of income shifting occurs through the choice of legal form of companies. Entrepreneurs face a choice between a (closely held) corporation and other legal forms of doing business, such as the (sole) proprietorship. Lower corporate tax rates may have induced them to switch to the corporate form, which then broadens the corporate tax base.

US evidence suggests that income shifting between personal and corporate tax bases is indeed significant (Gordon and Slemrod, 2000; Gordon and MacKie-Mason, 1994; MacKie-Mason and Gordon, 1997; Goolsbee, 1998; 2004). For Europe, such evidence is scarce.<sup>1</sup> This paper contributes to the literature by empirically exploring income shifting in Europe. Thereby, we analyze the two channels of income shifting discussed above, i.e. the choice of entrepreneurship and the choice of legal form. We use panel data from Eurostat on indicators for entrepreneurship and the share of the corporate sector in total business activity. Data are available for 20 European countries, 60 sectors and a maximum coverage of six years between 1998 and 2003.

Income shifting between personal and corporate taxes may have important implications for corporate tax policy in Europe. In particular, policy-makers may not worry too much about tax competition as long as the decline in corporate tax rates does not lead to a

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<sup>1</sup> An exception is Fuest and Weichenrieder (2002) who explore the share of corporate savings in total private savings in the OECD.

fall in corporate tax revenues. However, if income shifting between personal and corporate tax revenue is a major driving force for stable corporate tax receipts, then tax competition will not erode corporate but personal tax revenue. It would then imply that there *is* reason to worry about tax competition, since lower corporate tax rates do erode the financial basis of the public sector and of its redistributive policies in particular. Indeed, tax competition then erodes the role of the corporate tax as a backstop for the personal income tax, with important implications for total public revenue.

This paper is organized as follows. Section (2) elaborates in more detail on the paradox of falling corporate tax rates and rising corporate tax revenues in the European Union over the past decades. Section (3) formulates our predictions on income shifting between personal and corporate tax bases as an explanation for this paradox and elaborates on existing empirical evidence. Section (4) describes the data that we use to test our hypotheses on income shifting. Section (5) presents our empirical analysis and discusses the implications of income shifting for the corporate tax-to-GDP ratio. Finally, section (6) concludes.

## **2. The corporate tax rate-revenue paradox**

### **2.1 The negative relationship between corporate tax rates and revenues**

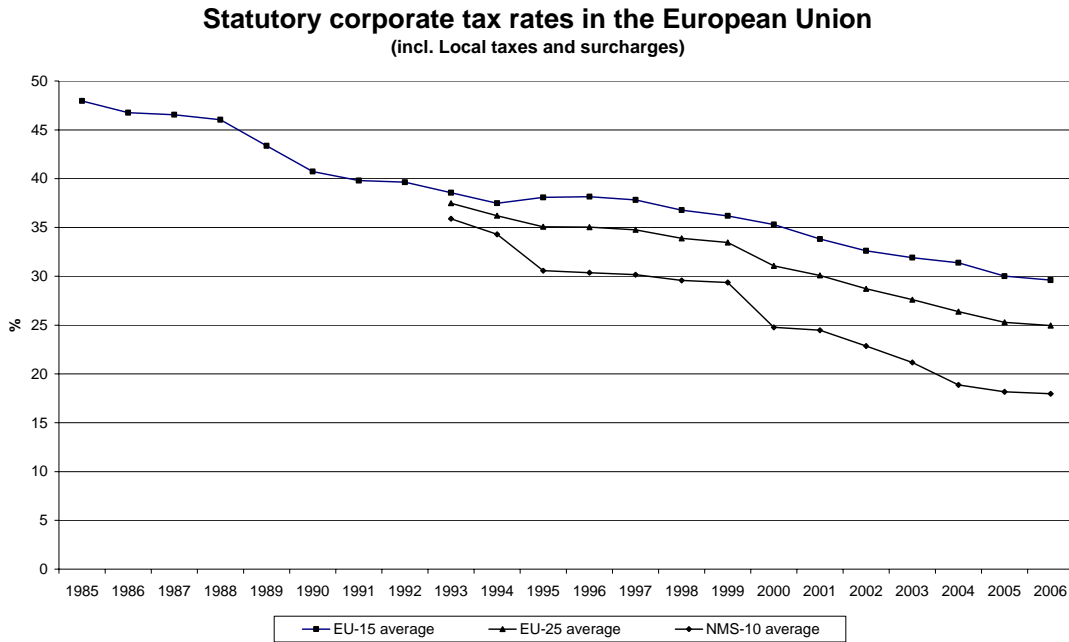
During the past two decades, statutory corporate tax rates in Europe have fallen considerably. Figure 2.1 illustrates this. It shows the development of the average statutory corporate tax rate in the European Union between 1985 and 2006. We see that the average tax rate has dropped in the EU-15 from slightly below 50% in 1985 to 30% in 2006.

The decline in corporate tax rates has induced fears of a race-to-the-bottom in the European Union, i.e. a process in which competing governments successively undercut each others tax rates in order to attract mobile tax bases.<sup>2</sup> This could ultimately erode corporate tax revenues and impose a threat to the financing of the European welfare states. Such fears for tax competition have been reinforced recently by the accession of ten new Member States (NMS). Indeed, these countries apply corporate tax rates that have gradually reached levels of more than 10%-points lower than in the EU-15 countries (figure 2.1).

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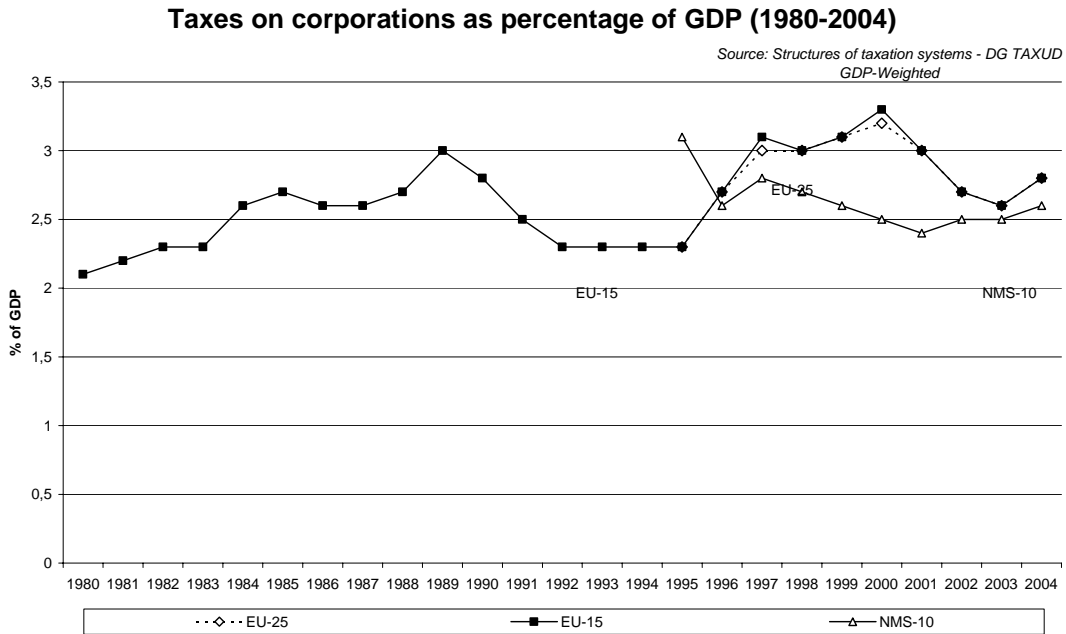
<sup>2</sup> See Nicodème (2006) for a review of the literature on tax competition. Note that the incentive for undercutting each others tax rates is counterbalanced by the incentive to export taxes in light of a growing share of foreign ownership of domestic firms, see Huizinga and Nicodème (2006).

**Figure 2.1: Evolution of statutory corporate income tax rates in the European Union.**



Source: European Commission. The rates include local taxes and applicable surcharges.

**Figure 2.2: Corporate income tax in percentage of GDP.**

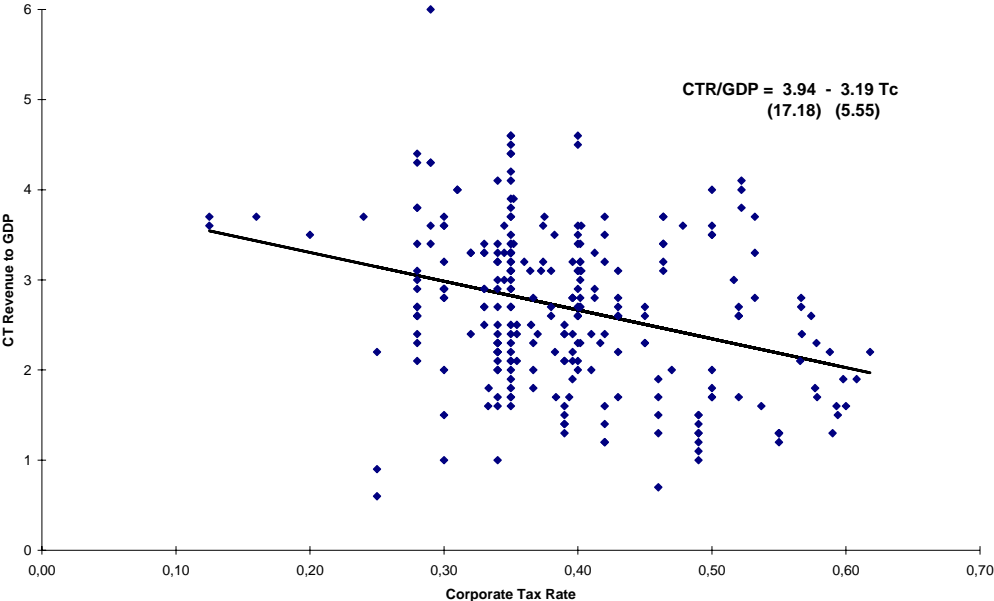


Source: European Commission. Measures are GDP-weighted.

Despite the reduction in corporate tax rates, corporate tax revenues have maintained remarkably stable over the past decades. Figure 2.2 shows the development of corporate tax

revenue as a share of GDP during 1980 and 2004 for the European Union. We see that this corporate income tax-to-GDP ratio is volatile as it is heavily influenced by the business cycle. The trend in figure 2.2 suggests, however, that the ratio has remained stable since 1980 for the EU-15 and actually increased somewhat during the last decade.

**Figure 2.3: Relationship between corporate tax to GDP ratio and the statutory rate.**



*Source: European Commission and Structures of taxation systems.*

While trends suggest an inverse relationship between corporate tax rates and corporate tax revenue over time, this relationship is also present in a cross-section of European countries. Indeed, countries featuring a relatively high corporate tax rate tend to collect relatively little corporate tax revenue.<sup>3</sup> Figure 2.3 plots pairs of the tax rate and the corporate tax-to-GDP ratio between 1985 and 2004 for 14 old EU Member States (EU-15 minus Luxembourg). A simple regression suggests that an increase in the corporate tax rate by 1%-point is accompanied by a fall in corporate tax-to-GDP ratio by 0.0319 (t-stats are reported between brackets).

<sup>3</sup> If we correlate for 14 EU countries (EU-15 minus Luxembourg) the statutory corporate tax rate with the corporate tax to GDP ratio, we find a negative correlation for most of the years between 1985 and 2004. On average for this period, the correlation is - 0.13.

## 2.2 A decomposition of the corporate tax-to-GDP ratio

The negative correlation points to a paradox between rate and revenue. Apparently, the corporate tax base has broadened, which made up for the revenue loss from rate reduction. A growing number of studies try to understand the origins of this base broadening (Devereux et al., 2004; Weichenrieder, 2005; Sørensen, 2006). Below, we follow this literature in describing trends in the components of the corporate tax base. In particular, we divide the corporate tax-to-GDP ratio into three components:

$$\frac{CTR}{GDP} = \frac{CTR}{TCP} \times \frac{TCP}{TPE} \times \frac{TPE}{GDP} \quad (2.1)$$

The first term on the right hand side of (2.1) reflects corporate tax revenue (CTR) as a share of total gross operating profit of corporations (TCP). It provides a rough measure for the implicit tax on corporations. The second term measures total corporate profits as a share of total gross operating profit in the economy (TPE). It reflects the share of the corporate sector in the economy. The final term reflects total business income as a share of GDP. Figure 2.4 contains charts that describe for 12 European countries the development of the tax-to-GDP ratio and its three underlying components in (2.1).<sup>4</sup> These graphs reveal that the three components have evolved in diverse ways between countries.

- The implicit taxes feature a fairly stable development in most countries. Exceptions are the UK and Poland, which show a decline; Spain and Finland show an increase.
- Most countries show a gradual rise in the degree of incorporation, including Germany, France, Belgium, the Netherlands, Austria, Finland, and Denmark. Italy and Spain show an opposite development.<sup>5</sup>
- The rate of total profit in the economy features a fairly stable development in most countries, although it has increased somewhat in France, Austria and Finland.

The diverse developments make it difficult to arrive at a single explanation for the rate-revenue paradox in corporate taxation in Europe. Below, we discuss each of the three components at the aggregate European level.

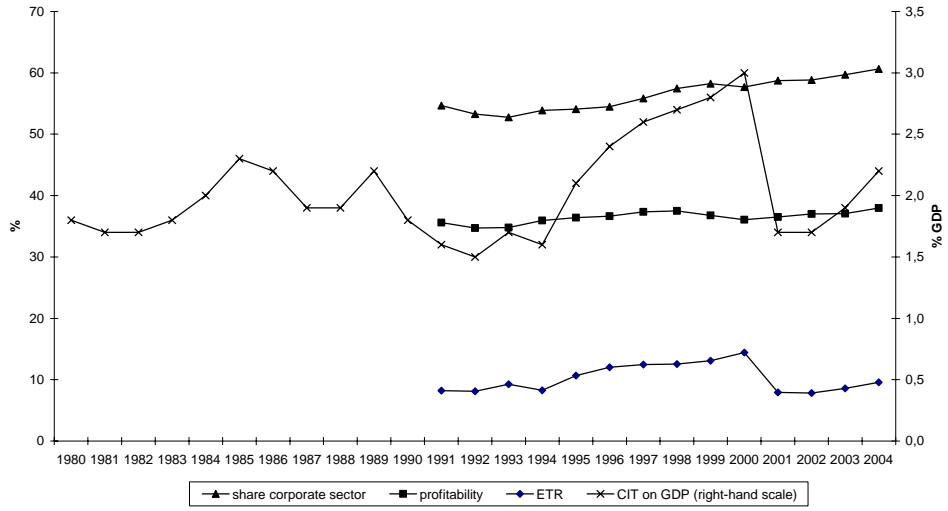
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<sup>4</sup> Sørensen (2006) adopts a similar approach, but considers only seven European countries. Our source is the AMECO database from the European Commission.

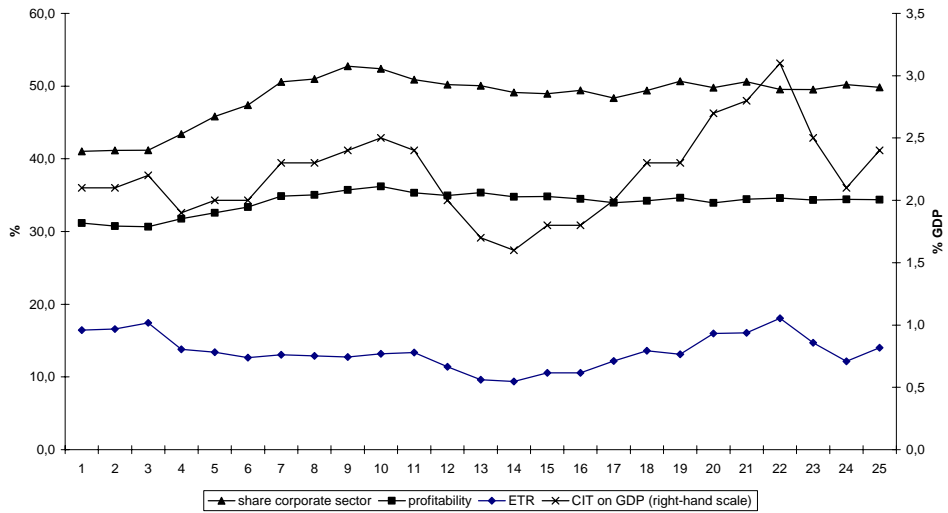
<sup>5</sup> Weichenrieder (2005) shows longer time series for Austria and Germany. In Austria, corporate share increased from 50% in the mid 1970s to 75% today. In Germany, it rose from less than 40% to around 55%.

**Figure 2.4: Corporate Income Tax on GDP and its components.**

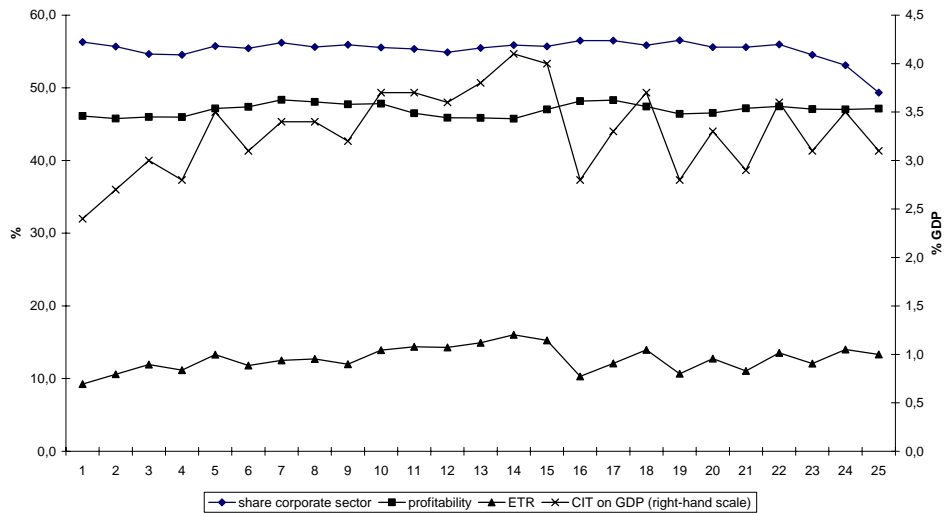
**Germany**



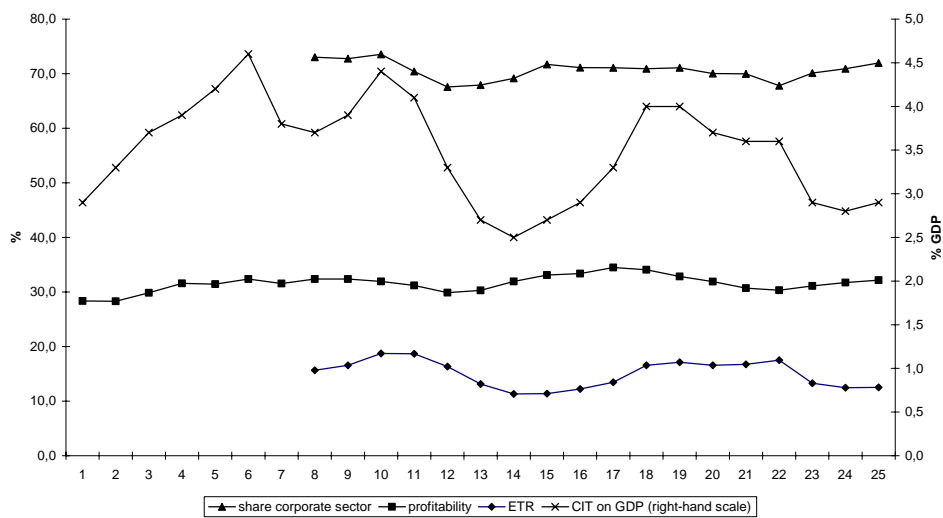
**France**



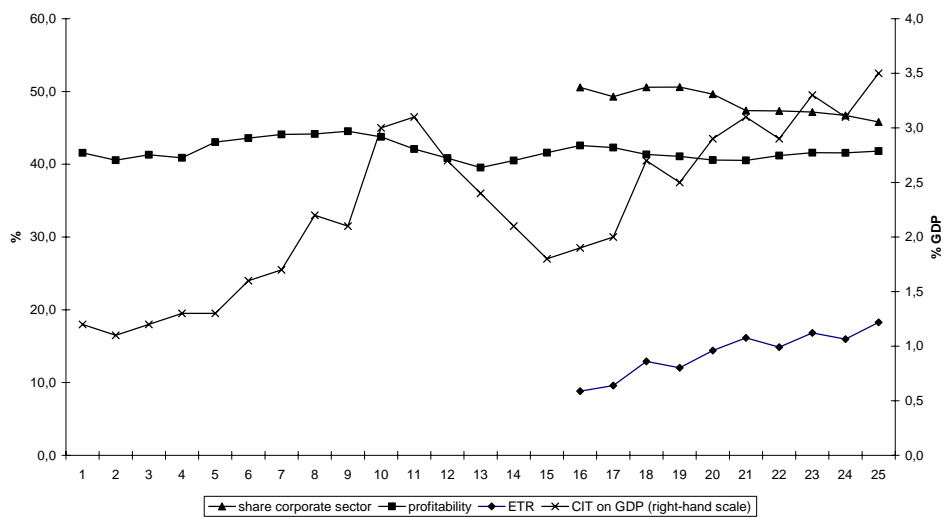
**Italy**



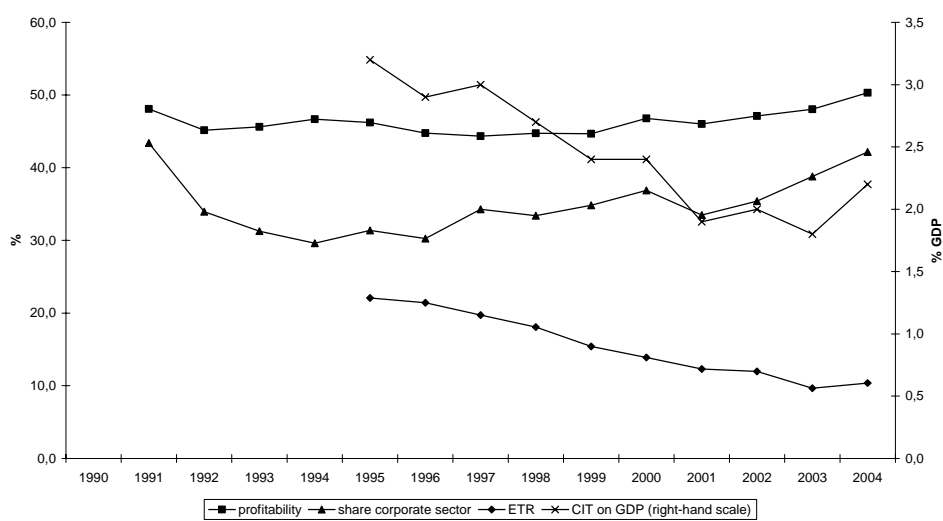
### United Kingdom



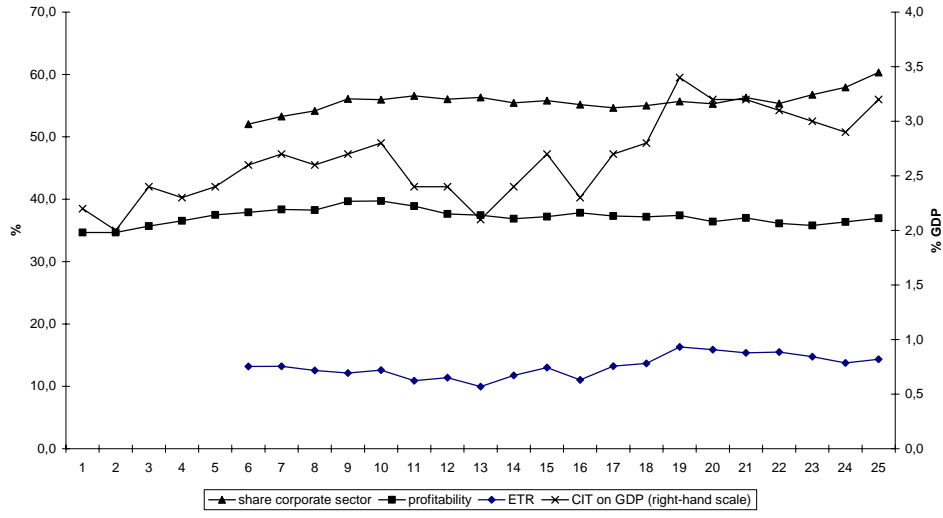
### Spain



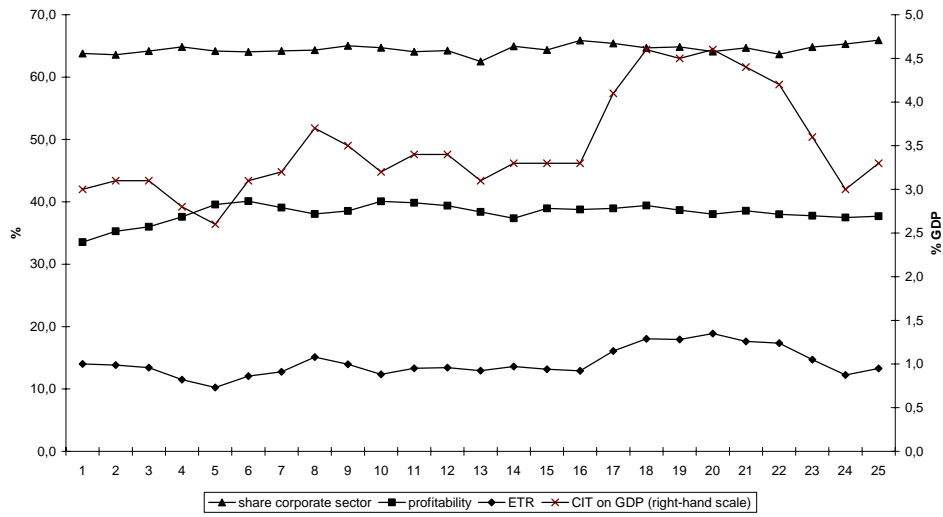
### Poland



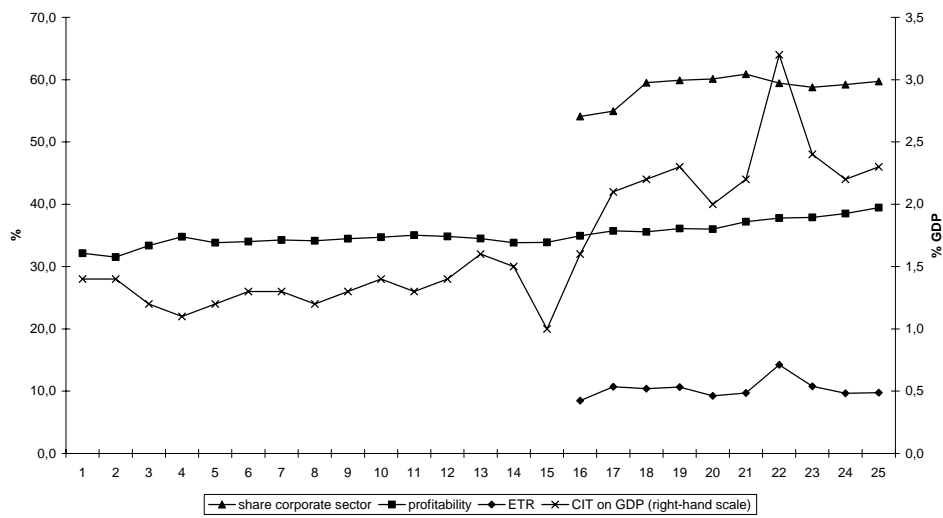
### Belgium



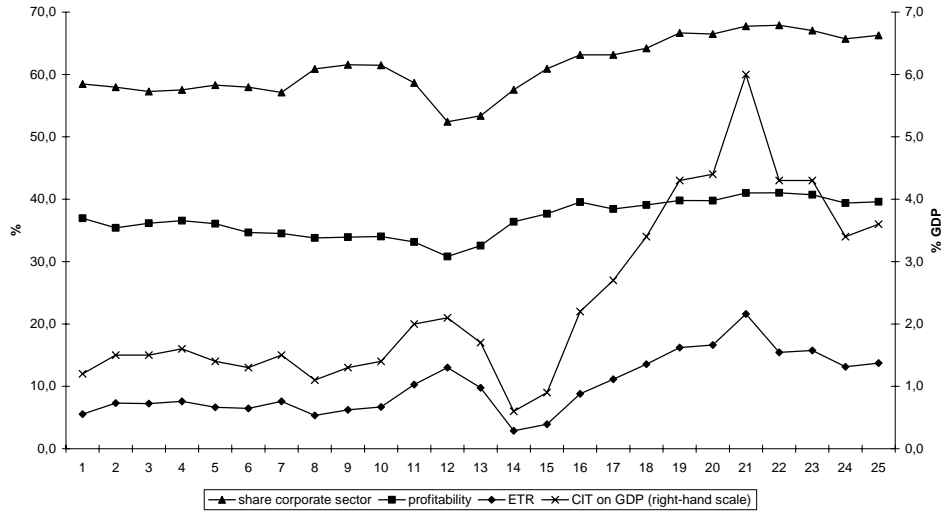
### The Netherlands



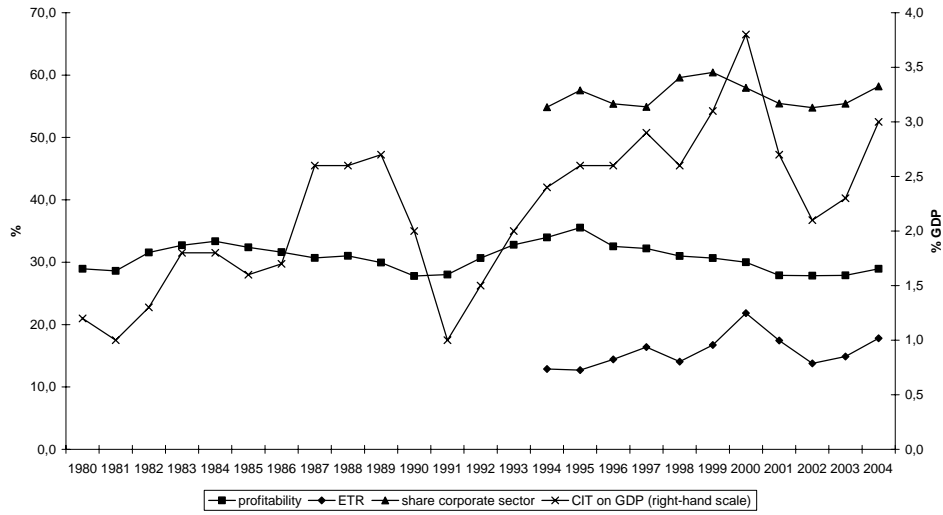
### Austria



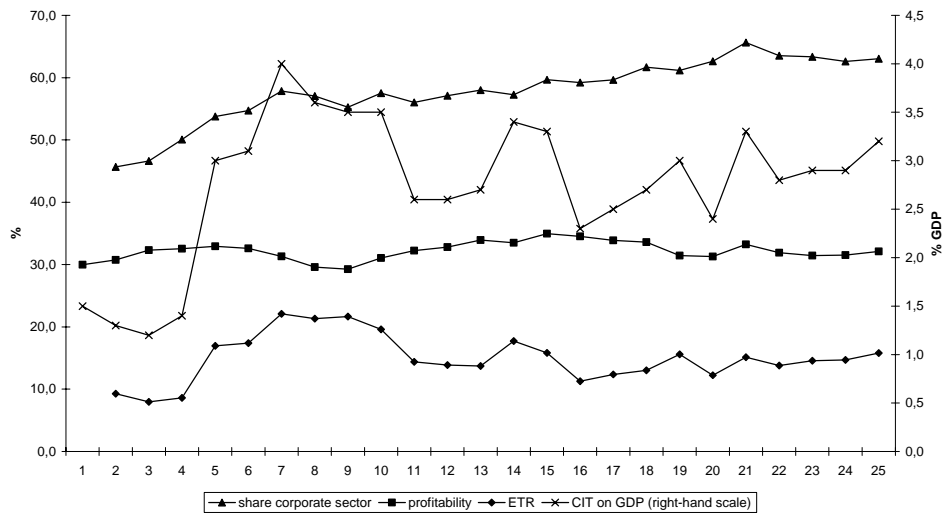
### Finland



### Sweden



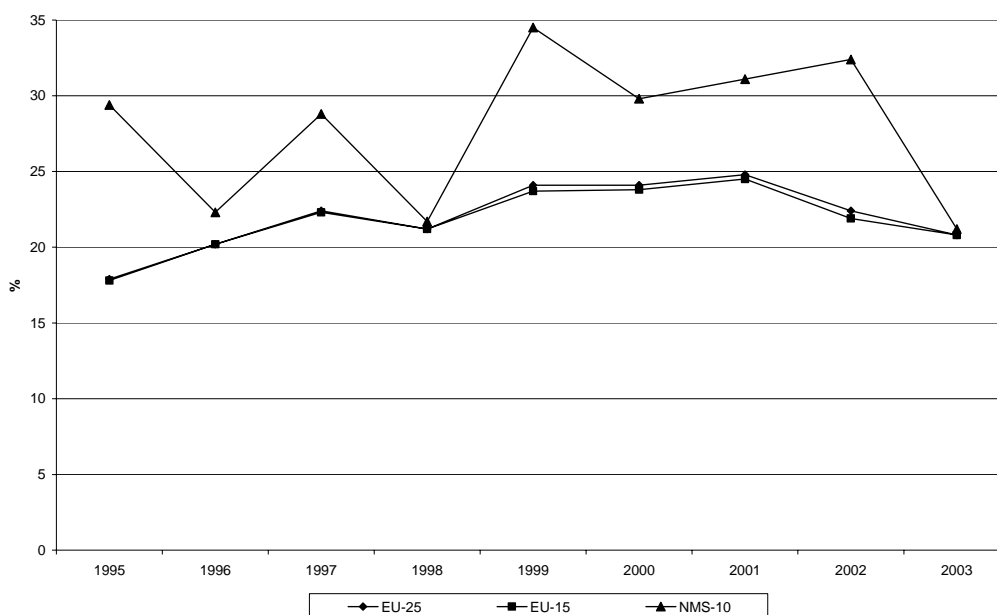
### Denmark



### 2.3 Base broadening policies

The first term in (2.1) stands for the implicit tax on corporate income. Figure 2.5 shows its development according to the European Commission based on revenue statistics. The figure presents the GDP-weighted average for the EU between 1995 and 2003. We see that the implicit tax on corporate income in the EU-15 has increased between 1995 and 2001, but declined in 2002 and 2003. The development in the new member states was more volatile.

*Figure 2.5: Implicit tax rate on corporate income.*



*Source: Structure of taxation systems. Slovakia excluded from average for NMS-10. GDP-weighted averages.*

One reason for the stable development of implicit tax rates observed in Figures 2.4 and 2.5 is that corporate tax rate reductions have been accompanied by base broadening policies in most countries, e.g. by means of reduced investment tax credits, loss offset rules, interest deductibility and fiscal depreciation<sup>6</sup>. Figure 2.6 provides ground for this latter policy development. It shows the arithmetic mean for 13 European countries (EU-15 minus Luxembourg and Denmark) for the net present value (NPV) of fiscal depreciation allowances

<sup>6</sup> In the US, Auerbach (2006) examines the role of losses in explaining the rise in the implicit tax rate on corporations.























































































