

The corporate income tax rate- revenue paradox: *Evidence in the EU*

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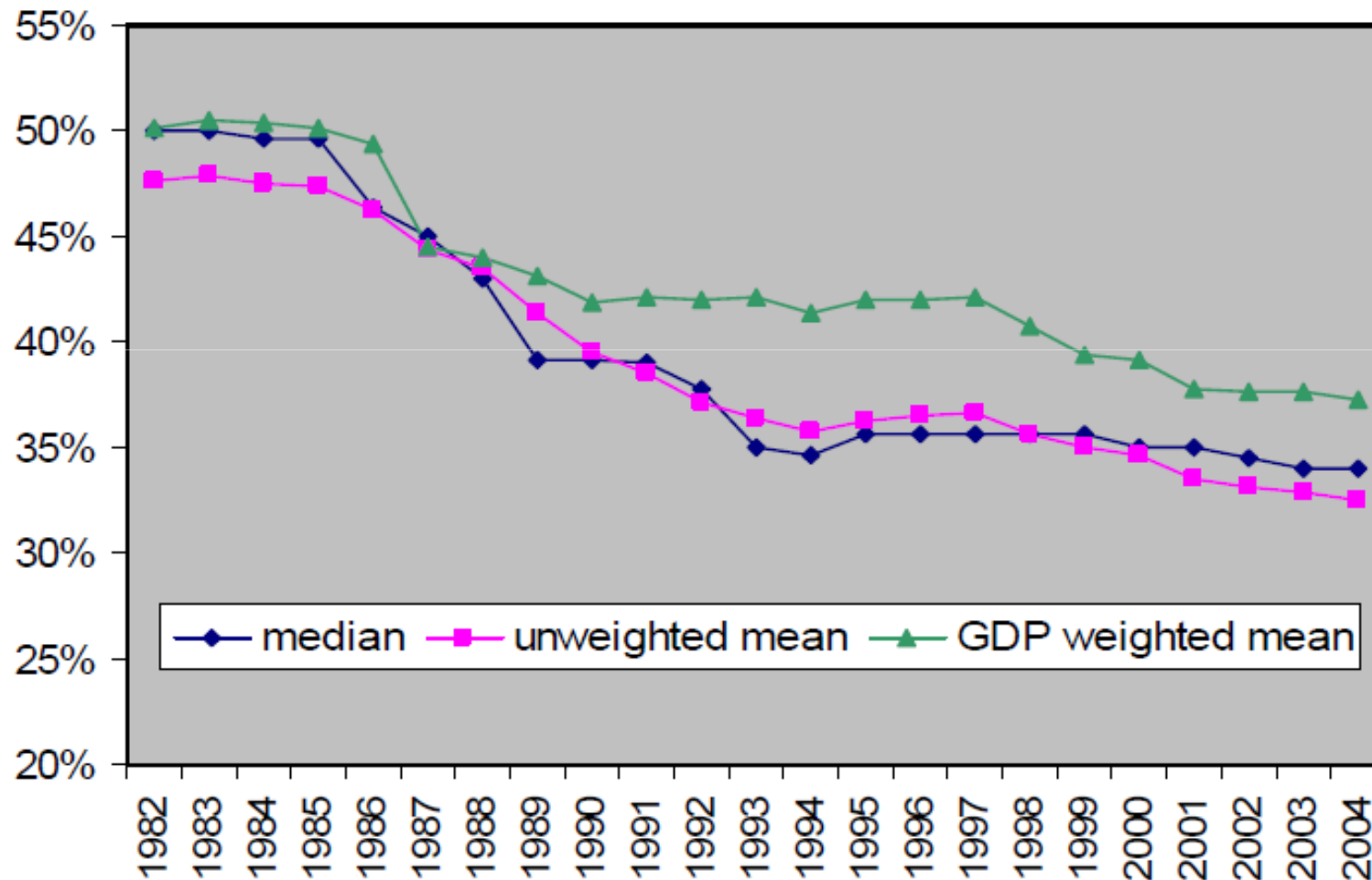
Europe: Decline in corporate tax rates not been reflected in tax-to-GDP ratios

- In Europe, the decline in the corporate tax rates has not been reflected in the tax-to-GDP ratios.
- What can explain the observed Δ 's in the ratio?
 - Changes in the effective tax burden on corporate income.
 - Changes in the share of total income accruing to the corporate sector .
 - Changes in total business income relative to GDP.

Observed trends

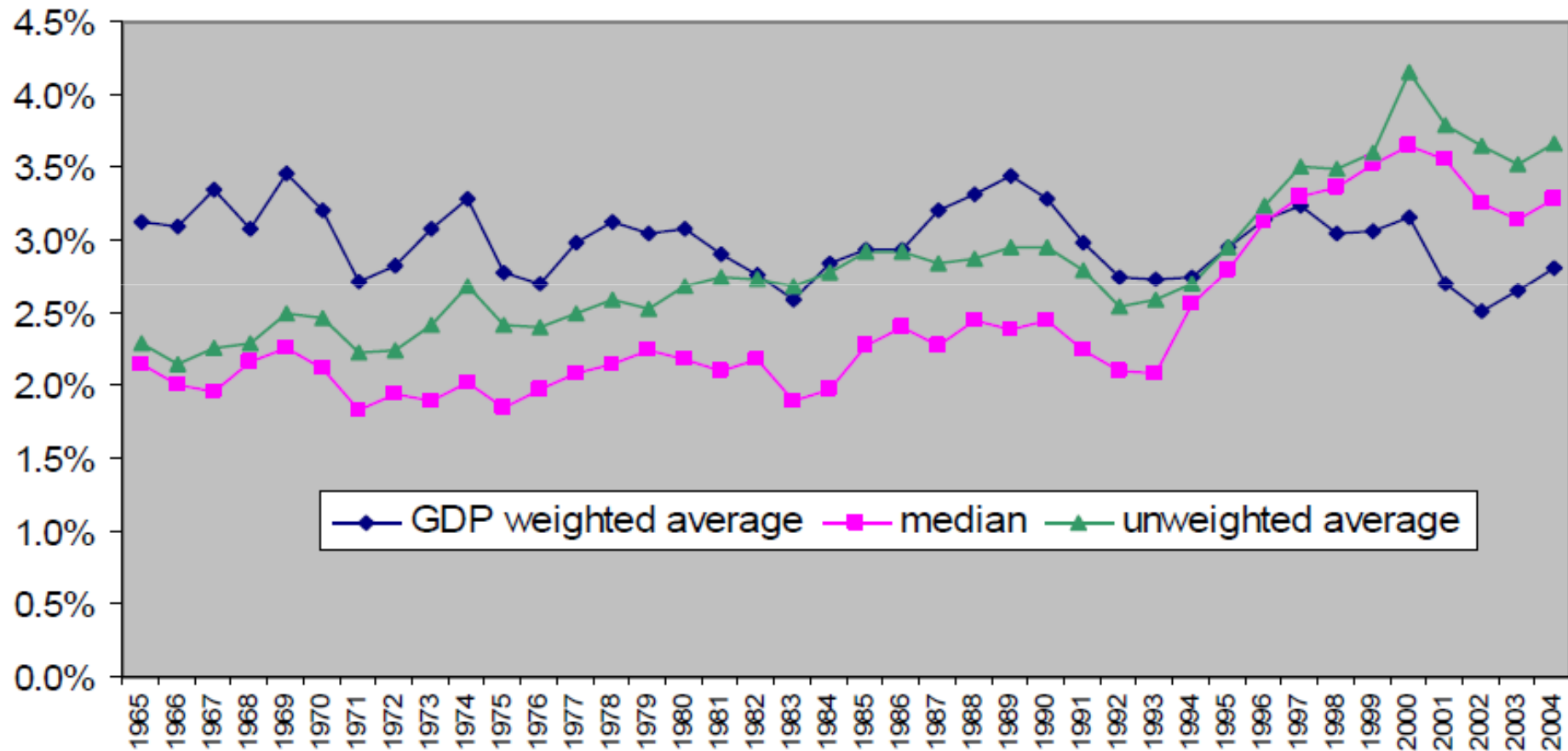
- According to Sørensen (2006), between 1982 and 2004, the fall of corporate statutory rates observed in the majority of OECD countries did not give rise to a decrease of corporate income tax revenues relative to GDP.
- A similar trend can be observed in the European Union where, according to European Commission's data for 1995-2005, the decrease in statutory rates has not been replicated in the changes of revenues from corporate income tax.

Observed trends: Average statutory corporation rates (1979-2005)



Devereux & Sørensen (2006). The Corporate Income Tax: international trends and options for fundamental reform. European Commissions Economic papers N° 264. For countries using different tax rates, the manufacturing rate is chosen. Local taxes (or the average across regions) are included where they exist. Any supplementary taxes are included only if they apply generally, rather than only under particular circumstances. Data for Denmark and Luxembourg are missing.

Observed trends: Corporate income tax revenues relative to GDP (1965-2004)



Devereux & Sørensen (2006). The Corporate Income Tax: international trends and options for fundamental reform. European Commissions Economic papers N° 264.

Literature review

- Two strands.
- On the sources of variation of corporate tax revenues:
 - Systemic characteristics of the corporate tax system
 - Corporatization and income shifting
 - Corporate profitability and capital income

Source of variation 1: Traits of the corporate tax system

- Auerbach (2006b) – US : Relatively stable ratio of federal tax revenues from non-financial corporations to GDP masking declining ratio of corporate profits of these corporations relative to GDP and increasing average tax rate on their profits. Role of treatment of tax losses.
- Creedy and Gemmell (2007) – UK: observed volatility of corporate tax revenues in 1992-2004 could be determined by the fiscal drag properties of the tax system. Fiscal drag describing the pattern of growth of corporate tax revenues relative to profits in an unchanged tax regime. Deductions role in determining rate of growth of corporate tax revenues relative to profits.

Source of variation 2: Corporatization and income shifting

- Clausing (2006) – OECD countries: conducts a systematic study of the role of several factors explaining the variation of the size of corporate income tax revenues relative to GDP in 1979-2002. Tax-to-GDP ratio is greater in countries with greater share of corporate sector in the economy and in countries with higher corporate profit rate.
- Sørensen (2006) and Mooij and Nicodème (2007) argue that the rate-revenue paradox may be explained by increasing corporatization on one hand, itself caused by subsequent decline of certain sectors in which non-corporate organizational form dominates, and income shifting between personal and corporate income.

Source of variation 3: Corporate profitability

- Auerbach and Poterba (1987) for the U.S. and Douglas (1990) for Canada, analyze the impact of tax and profit rates on the decline of the corporate income tax revenues. The two studies indicate that the decline of the corporate income tax revenues is mainly due to declining corporate profitability.
- Devereux et al. (2004) – UK: the main underlying causes for the increase of corporate tax revenues 1980-2004, are the widening of corporate income tax base, structural changes resulting in greater participation of the financial sector, and increasing profitability of the latter around the year 2000. The primary reason for the strength of corporate tax revenues could be the rise of corporate profits in GDP.

Source of variation 3: Corporate profitability

- Swiston et al. (2007) – U.S.: personal and corporate income tax, capital gains and income distribution explain variations of tax revenue. The 2004-2006 increase of the tax-to-GDP-ratio in the US is mainly due to growth of corporate profits and capital gains. The author's analysis of time series adjusted for tax policy changes suggests that corporate income tax is the most volatile revenue component so, the observed surge in tax revenue buoyancy is a temporary phenomenon.

Methodology

- Sørensen (2006) approach based on a decomposition of the ratio of corporate income tax revenues to GDP.

$$R/GDP = R/C * C/P * P/GDP$$

R	total corporate tax revenue
C	total corporate income
P	total business income
R/C	tax revenue relative to corporate income
C/P	ratio of corporate income to business income
P/GDP	business income share of total GDP

Data sources

- Eurostat (based on harmonized computation of ESA95 national accounts).
- European Commission (2005), "A study to compute and analyse effective levels of company taxation within an enlarged European Union using a model approach based on the Devereux-Griffith methodology".
- European Commission (2007), "Questionnaire on corporatization".

Data sources (2)

- Corporate income tax revenues and GDP: Eurostat.
- Value for C: The denominator of the implicit tax rate on corporate income is used as proxy measure of corporate income (C).
- Value for P: The data relative to income of corporations and active income of households is subtracted from the denominator of the implicit tax rate on capital and business income and used as proxy measure of business income (P).

On using the denominators of the income tax rate

- The formula allows using the same data to compare changes in all three indicators that may influence the rate-revenue paradox.
- Using the implicit tax rate denominators allows decomposing corporate and business income. This in turn allows for the analysis of changes in the components of these two types of income, a methodology that has not been applied in previous studies.
- The methodology used for the construction of implicit tax rates has been agreed with the Member States. One of the main advantages of the backward-looking implicit tax rate indicator is its comparability arising from the consistency and harmonized computation of ESA95 national accounts data.

Limitations of methodology

- The implicit tax rate indicator measures the average effective tax burden on an approximation of the potentially taxable base in the economy. This potential tax base is comparable across countries but **does not measure the actual tax base defined in tax legislation.**
- The Sørensen formula, and in particular the C/P ratio, **does not allow to find out how much** of the increasing role of the corporate sector is **due to a change in structure and size and how much is related to a change in relative corporate profitability.**
- Even after taking away passive income, **P does not allow for a full split of the income between income for households and income of self-employed.** Main drawback of working with data at the current level of data aggregation.

Findings

- **Corporate tax revenues** remained relatively **stable** around the level of 3% relative to GDP over the period 1995-2004.
- On average, the **effective tax burden** on corporate income has been gradually **reduced** from 32% in 1998 to 26% in 2004.
- Corporate income relative to total business income (**rate of incorporation**) increased steadily. It was **9 percentage points higher in 2004 than in 1995**.
- The ratio of **business income to GDP** remained fairly **stable** over the period.

Business income (P) and components in 1995 and 2003 in selected EU countries¹

- The decomposition of the business income sheds light on the developments that took place at the EU level.

COMPONENTS OF P (ESA 95)		1995	2003	1995-2003
		SHARE in P (%)	SHARE in P (%)	CHANGE ² (%)
C	Corporate income	48,7	52,7	8,2
b2n (S.14-S.15) ³	Net operating surplus of households, self-employed and non-profit institutions	12,9	11,7	-9,3
b3n (S.14-S.15) ³	Net mixed income of self-employed	36,7	33,7	-8,2

¹ BE, CZ, DK, EE, ES, FR, IT, LT, NL, AT, PL, PT, SK, FI, SE, UK..

² Measured as share of the difference of last year and first year in the value for the first year.

³ Non-corporate business income = b2n (S.14-S.15) + b3n (S.14-S.15).

- The increase in business income relative to GDP is mainly due to an increase of corporate income, which was stronger than GDP.
- However, important fluctuations at the country level.

Heterogeneity in ratio behavior

- 16 countries in the data set:
- 11 countries experienced increasing corporate tax revenues relative to GDP
(Austria, Belgium, the Czech Republic, Denmark, Finland, France, Italy, Poland, Portugal, Sweden and the UK).
- 5 countries experienced decreasing corporate tax revenues relative to GDP
(Estonia, Lithuania, the Netherlands, Spain and Slovakia).

Developments in components of Sørensen formula: corp. tax level (R/C)

- Compare the evolution of the ratio of corporate tax revenues to corporate income with the trend in the effective tax burden.
- The comparison provides an indication as whether there was a **change in the tax rate or in the tax base over time.**

Corporate tax level (R/C)

Table (2): Corporate taxation in selected EU countries (1995-2004).

Country	BE	CZ	DK	EE	ES	FR	IT	LT
R/C	+	0	+	-	+	+	-	-
ETR ¹	-	-	-	-	0	+	-	-
Country	NL	AT	PL	PT	SK	FI	SE	UK
R/C	-	+	-	+	-	0	+	-
ETR	0	+	-	-	-	+	+	-

"+": increase "0": constant "-": decrease

¹ ETR : effective tax burden.

- 7 countries Δ^+ corporate tax revenues relative to corporate income (Austria and France coincides with increase in effective corporate tax burden while in Spain the burden is unchanged)
- 8 countries Δ^- (For all it coincides with a fall in the effective tax rate)
- Finland reported a stable ratio (coincides with an increase in effective tax burden)

Corporate tax level (R/C)

- For most countries the direction of the changes in the effective tax burden corresponds to the direction of the changes in corporate tax revenues relative to corporate income.
- However, for **one third** of the countries this reasoning does not apply. In addition, for the countries where this reasoning does apply, the **size of the changes in corporate tax revenues relative to corporate income cannot explain the relatively moderate effect on the corporate tax revenues relative to GDP ratios.**

Developments in components of Sørensen formula: corporatization (C/P)

- Compare the evolution of the ratio of corporate income to total business income with other trends observed in corporatization:
 - Corporate profit shares
 - Ratio of self-employed to total employment
 - Share of business activity performed under corporate form (incorporation), both in terms of number of corporations and their turnover.
- Comparison provides some information on **changes in the size of the corporate sector and corporate profitability over time.**

Corporatization (C/P) in selected EU countries (1995-2004)

Country	BE	CZ	DK	EE	ES	FR	IT	LT
C/P	+	+	+	+	-	+	+	+
Corporations/Enterprises		+	+	-		+	+	-
Turnover Corporations/Enterprises		+	+	-		+	-	+
Corporate Profit share	+	-	0	0	0	0	0	+
Self-employed/Total employment	-	-	-	+	-		-	-
Country	NL	AT	PL	PT	SK	FI	SE	UK
C/P	+	+	+	-	-	+	+	+
Corporations/Enterprises	+	+			+	+	-	
Turnover Corporations/Enterprises	+	+			+	+	+	
Corporate Profit share	0	+	+	0	+	0		
Self-employed/Total employment	0	0	0	+	+	-	0	-

- 13 countries Δ^+ corporate income relative to total business income (For 8 it coincides with an increase in either the rate of incorporation or corporate profit share. For 3, no clear trend and in Estonia it decreased)
- 3 countries Δ^- (2 show decrease in the rate of incorporation and Slovakia an increase)

Corporatization (C/P)

- Corporatization through the evolution of the share of corporate income in total business income.
 - In Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, Italy, Lithuania, the Netherlands and UK, corporate income = bulk of the business income. Δ^+ of corporate share in total business income accompanied by Δ^- of the share of the non-corporate sector.
 - In France, Poland, Portugal, Spain, Slovakia and Sweden the share of non-corporate income = bulk of business income. Δ^+ of the share of non-corporate income in total business income was accompanied by a Δ^- of the corporate sector's share.

Developments in components of Sørensen formula: business income (P/GDP)

- 6 countries Δ^+ business income relative to GDP (Czech Republic and Poland report consistently higher growth rates than GDP, Estonia, Finland, the Netherlands and Austria enjoy a particularly high growth rate in the first half)
- 7 countries Δ^- (Belgium, Italy, Portugal, Spain and Sweden report the growth rates of business income to be consistently lower than GDP while Lithuania and Slovakia display particularly high growth rates. Negative for Netherlands and Sweden)
- In 3 countries it remained stable

Country overview of the trends in relevant economic and tax indicators (1995-2004)

Country	R/C	C/P	P/GDP
BE	+	+	-
CZ	-	+	+
DK	+	+	0
EE	-	+	+
ES	+	-	-
FR	+	+	0
IT	-	+	-
LT	-	+	-
NL	-	+	+
AT	+	+	+
PL	-	+	+
PT	+	-	-
SK	-	-	-
FI	0	+	+
SE	+	+	-
UK	-	+	0

Conclusion

- While the list of factors that could potentially explain the corporate income rate-revenue paradox is long, the relative importance of all these factors is not known yet and should be further studied.
- Data limitations and lack of specific analyses of the developments in the EU partially the cause of the confusion.
- Difference between legal definition and national accounts.
- Heterogenous experiences across EU countries (problems with panel data).