The 20th International Scientific Conference Globalization and its Socio-Economic Consequences

Impact of tax effects on profit optimisation. Review of international approaches

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Introduction

- the global economic downturn has increased the importance of profit optimization
- split in literature on how great is impact of tax benefits - from 2,73% to 10% of corporate value
- many opportunities for creation of tax shield in national scale

Aim of the study

The aim of the paper is to examine the conditions for the creation of the tax shield in the context of the V4 countries and other EU Member States.

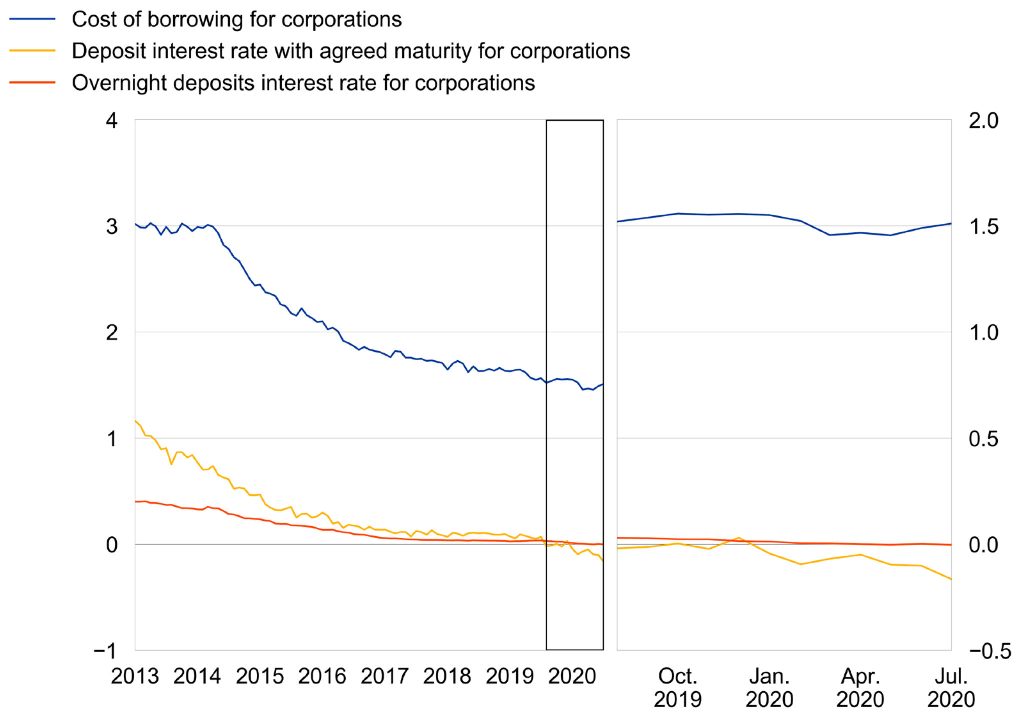
The second goal of the study is to evaluate the impact of these conditions and industry affiliation on the value of tax shield (effective tax rate).

Tax shield valuation approaches

- Modigliani and Miller (1963) - a model with strict conditions of a perfect capital market
- Velez-Pareja (2010,2016) - more realistic conditions, partial tax shield, tax carry forward inclusion
- net tax shield - inclusion of personal tax
- conflict between the approaches of Miller (1977) and Velez-Pareja (2017)
- general model by Castillo, Niño & Zurita (2017) - full coverage of OECD tax systems
- dividend distribution system - Estonia, Latvia and Georgia
  - supports the investment activity of the company
  - examined by Sander (2005)

Sources of tax shield: interest

- interest - subject to massive quantitative easing (the euro area) - low interest rates



Source: ECB

- thin capitalisation rules - avoid over-indebtedness
- in EU Member States – implementation of **Council Directive (EU) 2016/1164 (ATAD)**
- Slovakia - tax-deductible interest at a maximum of **25% of EBITDA**
- the Czech Republic – interest testing with the **4: 1** rule (debt to equity), tax deductible financial costs up to **30% EBITDA** or up to **80 mil. CZK** (almost 3 million EUR)
- other EU countries - 30% EBITDA rule
- Austria - without the statutory thin capitalization rule

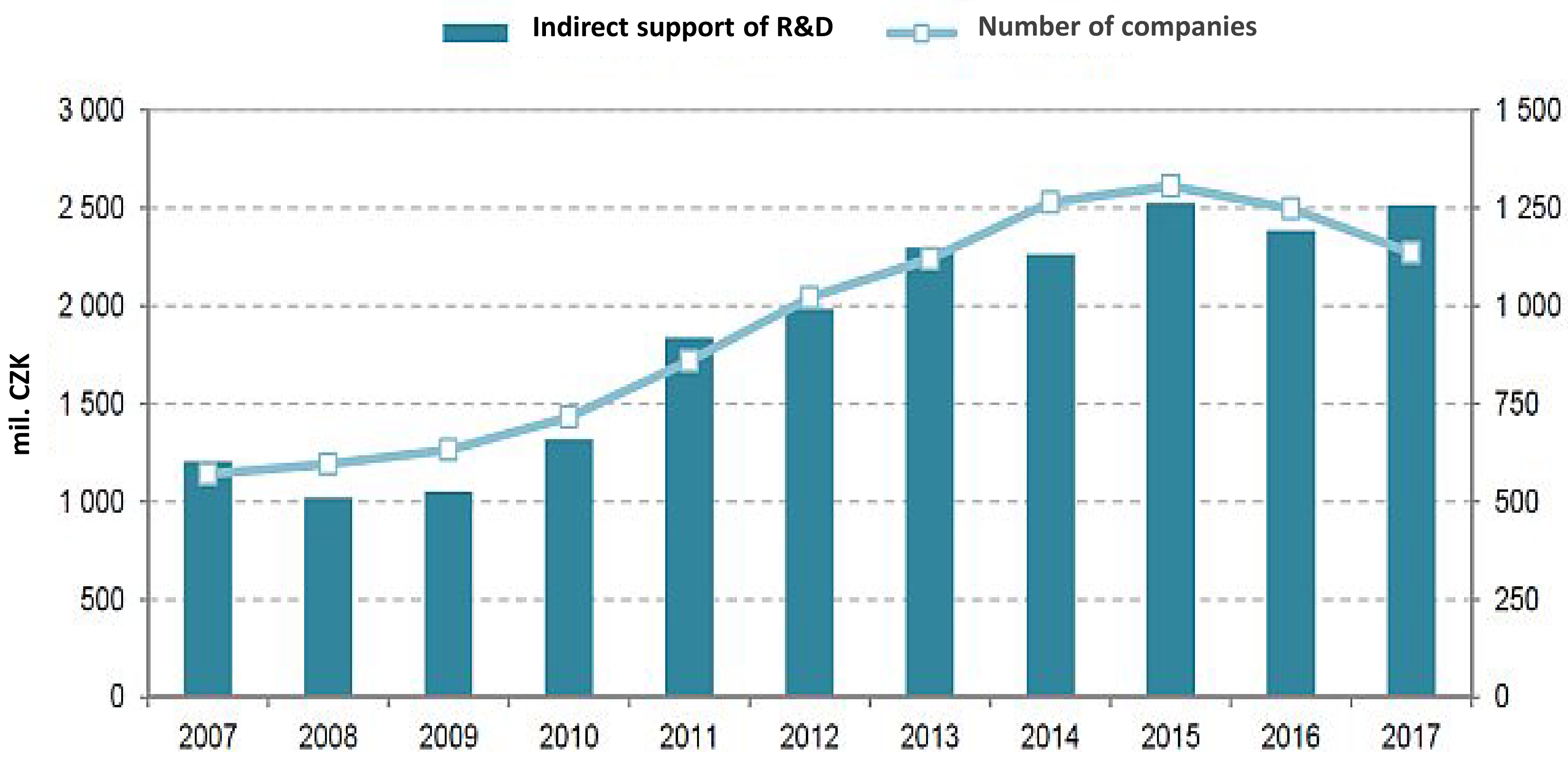
Sources of tax shield: depreciation

- mostly application of depreciation groups and full use of straight-line and accelerated depreciation (exception - Slovakia)
- one-off depreciation possible - Poland, Hungary
- tax depreciation not allowed - Estonia and Latvia (dividend distribution system)

Sources of tax shield: R&D cost

- Slovakia - super deduction of research and development cost (**200% of the value**)
- the Czech Republic - lower support (**100% of value** and another **10%** of the year-on-year change in R&D cost)
- Poland - **100% value**, adopted patent box with a **5%** reduction in **corporate tax** on qualified intellectual property income
- Hungary - the highest value of the super deduction (**300% of the value**)
- Other EU countries - lower support for research and innovation

The growth of tax deductible R&D costs in the Czech Republic



Source: vedaavyskum.cz

Sources of tax shield: loss carry forward

- Slovakia - the tax loss is carried over in **four consecutive periods**, from 2020 up to **50% of the tax base** without an even distribution of the tax loss
- the Czech Republic and Poland - possibility of a **one-off deduction** or evenly over five consecutive periods
- Hungary - after **2015** time limit of maximum of **5 consecutive periods**
- Other EU countries - **tax carried forward time limit**, without time limit with **limit of percentage of year tax base** or **no tax loss carried forward** (Estonia, Latvia)

Model

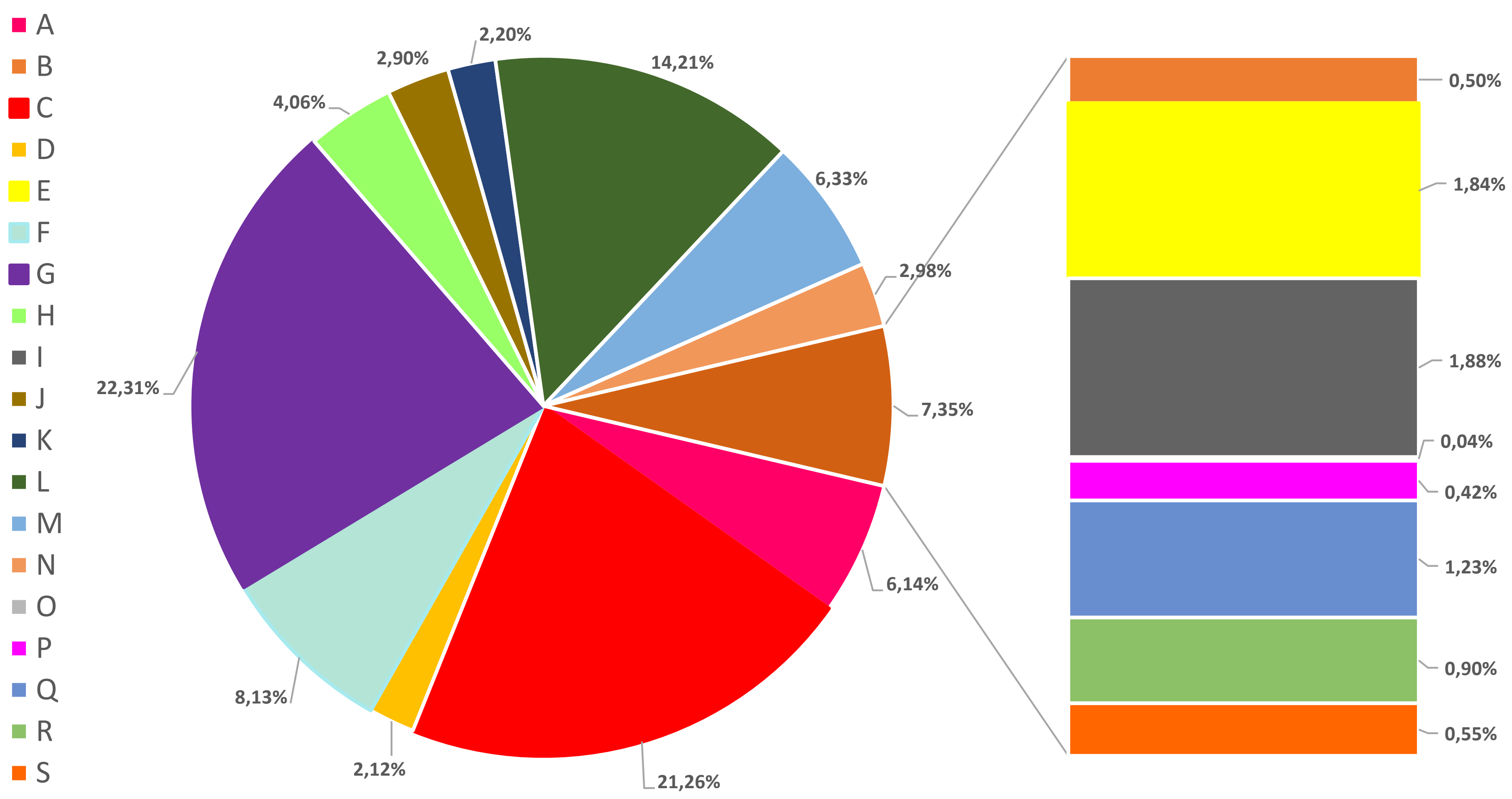
$$TAX_i = \mu + Country_j + Industry_k + Country \cdot Industry_{j \cdot k} + \varepsilon_{ijk}$$

- TAX_i - effective tax rate,
- $\mathbf{Country_j}$ - qualitative variable {The Czech Republic, Hungary, Polans Slovakia}
- $Industry_k$ - qualitative variable, industry classification according to NACE rev. 2
- $Country \cdot Industry_{j \cdot k}$ - interaction term

Methods and sample

- Two- way ANOVA with interaction
- Sample
  - Gross sample – 94 154 companies
  - Net sample (without missing data and outliers) – 90 324 companies
  - Analysed period - 2018
  - Criteria for selection:
    - Total assets > 1.000.000 EUR
    - Country affiliation – Visegrad Four

Industry structure of sample

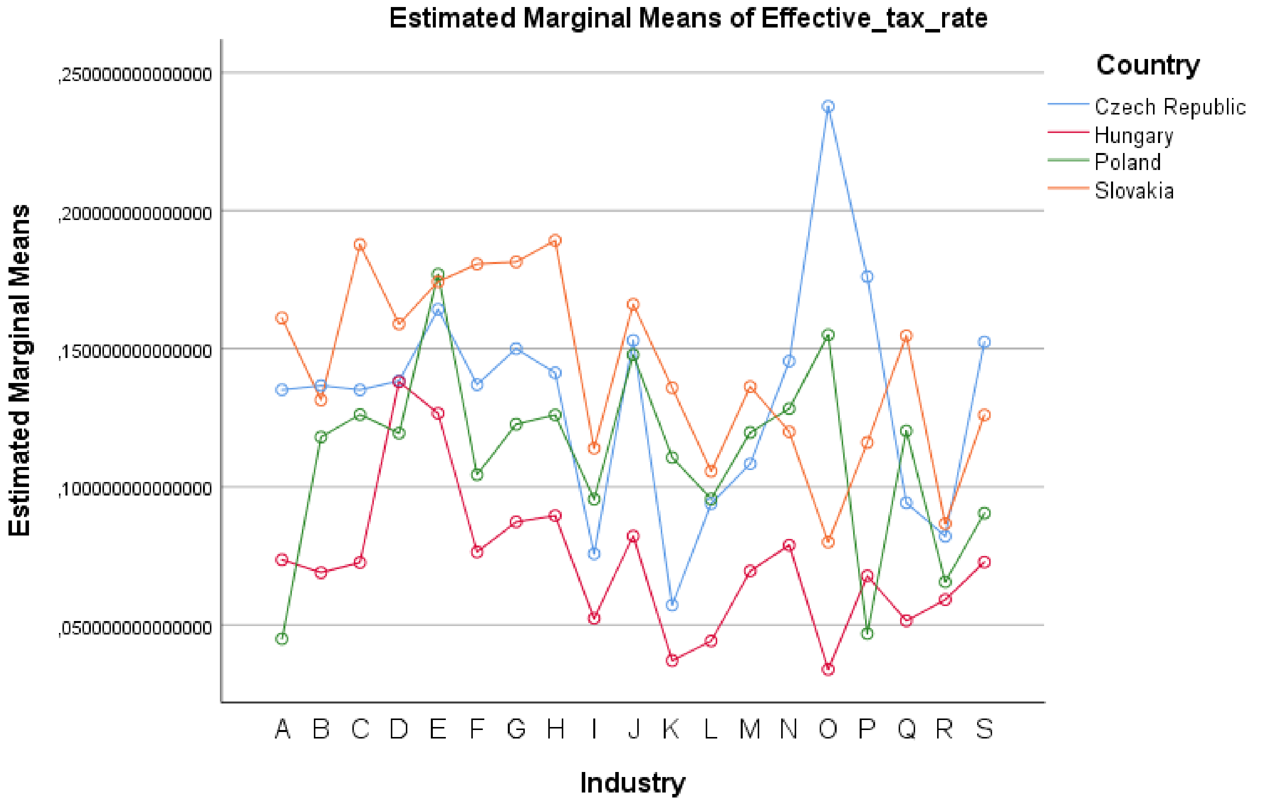


Results

Factor	Effective tax rate (total tax shield proxy)				
Country	Mean	Median	Std. Deviation	% of Total N	N
the Czech Republic	0,1275	0,1751	0,2079	23,55%	21270
Hungary	0,0715	0,0514	0,1412	21,96%	19835
Poland	0,1161	0,1036	0,2384	39,77%	35926
Slovakia	0,1579	0,2031	0,2467	14,72%	13293

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	115,130[a]	75	1,535	33,660	0,000	0,027
Intercept	81,776	1	81,776	1793,130	0,000	0,019
Country	4,316	3	1,439	31,545	0,000	0,001
Industry	31,251	18	1,736	38,070	0,000	0,008
Country * Industry	16,829	54	0,312	6,834	0,000	0,004
Error	4115,794	90248	0,046			
Total	5428,389	90324				
Corrected Total	4230,924	90323				

a. R Squared = ,027 (Adjusted R Squared = ,026)



- Effective tax rate in different industries varies across countries

Discussion

- Hungarian companies receive tax benefits to different level across industries
- no different in tax advantage across Slovak companies across industries
- Polish companies - significantly higher tax shield in agriculture and significantly lower in water management
- V4 countries (excluding Hungary) provide similar level of total tax shield regardless of country affiliation
- the results confirm the ranking of countries according to the Tax International Competitiveness Index 2019

for further questions, please, contact at

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