András Giday – Tibor Tatay

New Indicator to Measure Tax Burden – Proposal

SUMMARY: This paper investigates to what extent tax burden can be used to compare countries with different pension systems. It was concluded that in one respect tax burden ratios used by international institutions fail to completely represent the share of income left after taxation, as the contributions paid to occupational pension funds are not included in total tax burden calculations. In our approach, however, in case of pension contributions it is the obligation of the payment itself and not the recipient of payment that matters. To this end, a new ratio called the 'share of disposable current revenues' was introduced to indicate the current income employers and employees can dispose of after all mandatory payments have been settled. Mandatory payments in this sense include all payment obligations employers cannot evade to pay to an institution (state, pension fund, etc.)

We aimed to find out whether the comparison of tax and contribution revenues allows us to get an adequate image on the extent of the government's redistribution of income.

At first glance, the situation is a simple one, as international institutions compile information about the share of revenues resulting from tax and social security contributions in each country compared to their GDP on an annual basis. The most frequently used table shows the ratio of taxes and contributions to the GDP in each country by adding up their values. In another method, the total amount of taxes and social security contributions are divided by the GDP of the given year separately. The indicators produced this way, however, do not contain the amounts paid into occupational pension funds, as these are considered private revenues (that is, revenues outside of public finances).

First, we analyse the current indices of the tax burden and the contribution revenues of occupational pension funds. Since the contributions for pension purposes not paid to the state are also regarded as payments enforced by the state in our article, we add them to the contributions paid to the state. Then we can calculate our proposed indicators: the ratio of disposable current revenues. The novel evaluation of burdens could also influence the perception of competitiveness in the classification of countries.

E-mail address: andras.giday@gmail.com
tatay.tibor@hotmail.com

THE INDICATORS OF THE TOTAL TAX BURDEN

Many indicators are calculated regarding the extent of state tax and contribution burdens. These ratios are designed to demonstrate the extent of revenues centralized by the state as well as the extent of the state's redistributive role. These ratios are substantial from the point of tax-competitiveness, as they evaluate the labour-related burdens carried by employers and employees and the extent of the employee's net disposable revenues. The potential impacts of high payments are elaborated in the study of *Mádi and Árva* (2016), amongst others.

There are also several studies examining the sustainability of the pension system operated by the specific states. By sustainability, the authors generally mean whether the revenues serving as the basis of pension payments and the accumulated funds will be sufficient for fulfilling the payment obligations under the regulation in force in the period subject to their study.

The OECD publishes statistics on tax burden on an annual basis. Another organisation publishing comprehensive statistics is Eurostat. In recent years, the centralization reported by the two organisations differ from each other with 1-2 percentage points in the case of 4-5 continental countries. The primary reason for this is that the European Union switched to the application of the so-called total tax burden containing net social security contributions in its statistics. This indicator is used in EU practice nowadays.

The 2019 issue of the EU Taxation trends[1] sets out 4 types of tax burden indices (Page 258), out of which type 2 is based on the net social security contribution, which also includes the so-called imputed social security contribution. The publication demonstrates the difference between index 2 and index 4 broken down to countries on diagrams, see

page 259. Essentially, this difference is the imputed social security contribution. The imputed social security contribution mainly covers the contributions not paid by the state employer after public sector workers (e.g. military personnel).[2]

The EU administration further strengthens this trend. For example, in the annex of the Convergence Reports of 2019,[3] the above-stated index of tax burden/GDP was indicated amongst the data to be aggregated in the case of state taxes.

The OECD presents the revenue processes of each country in its Revenue Statistics publication in detail on an annual basis. In terms of payments, it calculates an indicator for the tax burden in which the payments to occupational pension funds do not qualify as state payments.[4]

The field of economy usually uses either the tax burden indicator of the European Union and or that of the OECD. The question arises why the analysts of taxation trends do not use indicators that better demonstrate real differences. In practice, these analysists primarily aim to present the trends of the period subject to their analysis. Therefore, they do not putter around with calculating new indicators, but take over the tables produced by the EU or by the OECD.

THE APPROACH OF ECONOMIC OPERATORS

An important factor is for whom the value of a tax burden of the specific countries provides relevant information.

▎For the economic operators of the country, the amount remaining from their realized revenues and the amount of the net wage payable by them might be important.

As permanent participants, they can assess that not only the extent of the specific types of

tax is important, but the total burden resulting from them, too. As, for example, if the mitigation of wage burdens is accompanied by the increase of consumption taxes, then in a few years, employees can pass the burdens of increasing price levels on to their employers.

❚ For the working capital aiming to invest in the given country or region, the extent of net wages it can pay to the workers and the dividend it can generate from its revenues is primarily important when assessing the costs side.

❚ Whether the given state can realize surplus revenues in taxes (contributions) in a possible emergency might be of importance for the financial investors taking over the bonds of a country. In a country already "maximised" in terms of taxation (such as Denmark or Sweden), this could run into severe difficulties.

THE COUNTRIES ANALYSED AND THEIR CLASSIFICATION

In addition to EU member states, we also considered important the evaluation of countries belonging to the European culture group, in a manner that the cardinality of countries be confined. Therefore, in addition to the EU, we examined the former British dominions (Canada, Australia, New Zealand) and the USA, and within Europe, we analysed countries with a population of at least 1 million and with an annual GDP of at least euros 20 billion.[5]

We summarized the results of our calculations separately for four groups – based on the ratio of payments containing the full scope of pension payments. These are the following:

- the countries with a pension system established based on the Bismarck model in Western and Southern Europe
- the four European continental countries

also demonstrating Anglo-Saxon influences in their pension systems (Netherlands, Denmark, Switzerland, Sweden)
- the (peer) Eastern Central European countries
- the countries having a pension system with dominant Anglo-Saxon features: two states of the British Islands, (Great Britain, Ireland) and the overseas countries (USA, Canada, New Zealand, Australia).

In the followings, we will examine and analyze which factors determine the ratio of current revenues distribution attributable to the state. In this context, we will review the role played by tax burden in the analysis of competitiveness.

Our article does not include a comparison between state and private pension benefits.[6]

We would like to note that in this article, we focus on payments for pension purposes, but similar issues may be raised in terms of payments for healthcare purposes, too.

FINANCING PENSIONS AND STATISTICS

There are two main categories of non-state pension funds. One encompasses the schemes operating on an occupational basis, while the other covers funds financed through personal payments.

The differentiation between personal and occupational pension funds is built on whether
- the employer initiates the payment into the pension fund and fund management or
- the employee individually (independently from his or her employer) chooses the fund he/she would like to join.

Figure 1 shows the ratio of contribution paid to occupational and personal pension funds to GDP in the countries subject to our study.

PRIVATE PENSION CONTRIBUTION PAYMENTS
(DATA AS A PERCENTAGE OF GDP IN 2017)
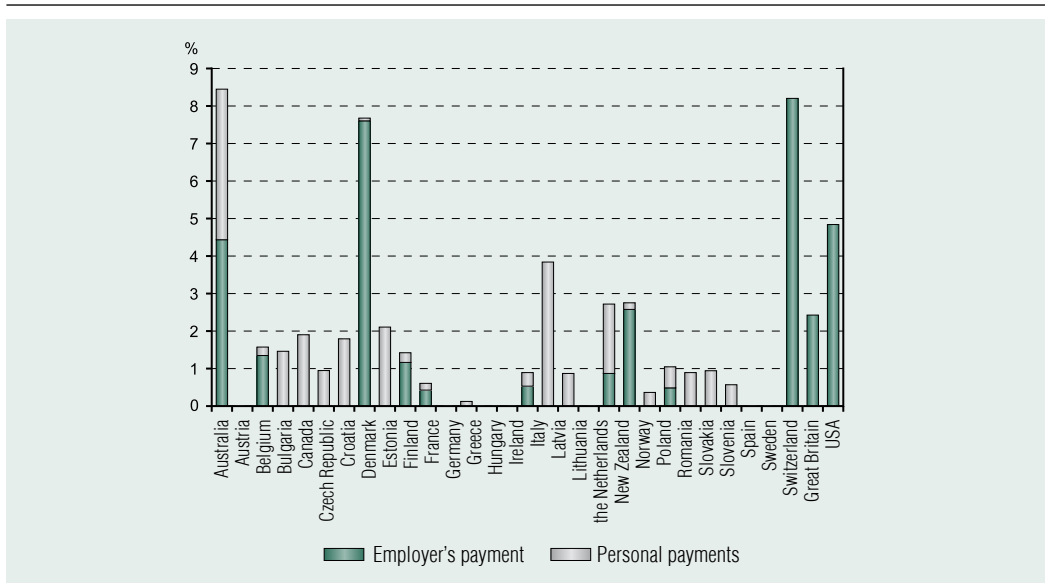
Comments: The overall data is not from 2017 in the case of the following countries: 2016 (UK), 2015 (BE, EST, FR, GR), 2014 (NZ), 2012 (CAN)
*The personal pension contribution is included in the EU state tax rate

Source: https://stats2.digitalresources.jisc.ac.uk/

Within personal pension funds, private and voluntary funds are differentiated. Payments to these funds only reach 1% of the GDP in certain member states of the European Union – that is, their role is less significant than that of occupational pension funds. The mandatory personal scheme is applied in several Central Eastern European countries – EU statistics display these as part of social security contributions (this is justified from the point that technically it is the state that collects and transfers it to the private pension funds).

The OECD data system classifies private pension funds as follows:

2 PRIVATE PENSION SCHEMES
    2/A/ Occupational pension funds
        2/A/1 Mandatory or quasi mandatory funds
        2/A/2 Voluntary funds[7]

2/B/ Personal pension funds
    2/B/1 The mandatory contribution is collected by: the state. In the case of these funds, the state transfers the collected (otherwise mandatory) contributions to the private funds.
    2/B/2 The voluntary contribution is collected by: the pension fund

On page 147 of Pensions at a Glance 2017, the OECD classifies the private occupational pension schemes of the different countries into the various categories as follows:

- it classifies the occupational pension systems of Australia, Denmark, Finland, the Netherlands, Norway, Switzerland and Sweden as mandatory or quasi mandatory,
- it classifies the pension schemes of Canada, Ireland, Britain, the USA and New Zealand as voluntary.

In OECD's definition, a scheme is voluntary if the economic entity can freely establish a pension fund and can make its workers enter the same.

In addition to the revenues of the state pension system, Eurostat also counts the personal pension fund payments collected by the state into the indicator of state tax burden (2B/1 items). (in the case of the countries marked with * in Figure 1). However, it does not calculate the revenues of occupational pension funds (2/A) into the indicator, and neither does it include the contributions of personal pension systems operating on a voluntary basis (2/B/2).

To calculate our own ratio, we introduced a new subcategory, under the title "payments". We classified each and every payment (not made to the state) that the economic entity and the employee cannot avoid to pay.

Due to their mandatory nature, we straightaway classified the contribution revenues of occupational funds under Point 2/A/1 as "payments." In our view, the revenues of independent occupational pension funds under Point 2/A/2 should also be considered payments (in the following countries: Great Britain, Ireland, Canada, New Zealand, USA).

We added said non-state pension fund contributions classified as "payments" to the value of the total tax burden calculated by Eurostat.

We introduce 3 arguments to substantiate our point:

Ad B1 In these countries, the employers are required to enroll new employees automatically into a pension system if such employee is not a member of any private pension systems yet (this is called *auto-enrollment)*. Individuals may only opt out from these funds if they transfer to another private pension fund (opt-out proceeding).[8]

Ad B2 Governments also strongly encourage payments to occupational pension funds with tax allowances (a value reaching 0.8-1.5% of the GDP annually). In the case of the British, for example, payments to these funds are exempted from tax, and the proceeds of the fund's investments are also exempted.

Ad B3 The system of occupational pension funds is closely linked to state retirement benefits. Their pension pay-outs are established in a manner taking into consideration the income available through the state (low) pensions – therefore, they focus on paying an amount exceeding the aforementioned minimum pension when the individual reaches old age. This way, there is a sort of symbiosis between the public and the private sector.

For employers, the payments made to the occupational pension funds cannot become profit (including dividend), and neither can the workers receive it in their net current revenues. In this sense, the system is similar to the schemes classified as mandatory (Netherlands, Denmark, Australia) – that is, the contribution is separated into the pension fund, and the concerned workers can only receive it as pension, decades later. Neither the employer, nor the employee may dispose over it in the short term, therefore, it has the economic impact of regular social security contributions. This means that for economic agents, payments to occupational pension funds have the same effect as social security contributions paid to the state. *(See Table 1)*

OUR PROPOSAL FOR A NEW RATIO

The index we propose is the ratio of disposable current revenues. The indicator is calculated in two steps.

❶ Calculating the "adjusted tax burden"

First we determine the size of the category we define as "payments" in the given country. Then we add the value of this "payment" to indicator No. 2 of the EU. This is how

OCCUPATIONAL PENSION FUNDS FROM THE PERSPECTIVE OF ECONOMIC AGENTS

	Mandatory private pension fund	Mandatory private pension fund	"*Voluntary*" private *pension fund*	"*Voluntary*" private *pension fund*
Economic agents	**Workers**	**Employers**	**Workers**	**Employers**
Is it possible to avoid payments to occupational pension funds?	No (due to collective agreements)	No (due to collective agreements)	*No (due to automatic enrollment)*	*No (due to automatic enrollment)*
Can the payments be utilised in the next 10-15 years?	No	No	*No*	*No*
State influence on the regularity of pension fund asset management?		Strong		*Significant*
The condition of tax allowance on payments		Compliance with requirements pertaining to asset management		*Compliance with requirements pertaining to asset management*
Is it mandatory?	Practically yes	Practically yes	*Theoretically no*	*Theoretically no*
Is the pay-out of the occupational pension funds built on the state minimum pension benefits?	Yes		*Yes*	

Source: edited by the author

we receive the "adjusted tax burden." This demonstrates the ratio of revenues (e.g. GDP) taken away from economic agents by the state.

❷ Determining the ratio of disposable current revenues.

Determining this ratio is easy: we deduct the value of the abovementioned "adjusted tax burden" from 1 (i.e. 100%).

The two-tier calculation is appropriate and practical because in this way, the ratio of the "adjusted tax burden" is available, which can directly be compared with the ratio provided by OECD or Eurostat for the total tax content.

Substantive differences will only be seen in countries where occupational pension systems are in operation.

In the case of payments levied on the labour forming the basic pillar of the tax burden, *Giday and Mádi* already established that its generally used indicator, the tax wedge, gives a distorted image in the case of EU member states applying private pension systems of a mandatory nature. Therefore, they recommended that the tax wedge increased with the mandatory private pension contributions be taken into consideration when comparing these countries.[9]

THE RATIO OF ADJUSTED TAX BURDEN AND DISPOSABLE CURRENT REVENUES IN THE FOUR GROUPS OF COUNTRIES SUBJECT TO OUR ANALYSIS

Figures 2/a and *2/b* show the percentage ratio of the adjusted tax burden, while *Table 2* demonstrates the ratio of disposable current revenues.

The majority of old continental EU member states

A comprehensive state pension system operates in these countries. Therefore, the rates of taxes and contributions are usually high. As a result, the disposable current revenues and its ratio are low. The tax burden indicator calculated by the EU shows a high value. The values of the system proposed by us do not deviate from this, because occupational pension funds only operate in a limited scope. The average of the adjusted tax burden of the group is high, 42.5%.

Peer Eastern-Central European Countries (new EU member states)

In the case of the majority of these countries, the tax burden indicator is of medium level, only one or two countries approach the higher Western European rates, but there are also countries with less payments (e.g. Romania, Bulgaria). The average is 34.1 percent. In the past 10 years, half of the countries abolished the previously introduced private pension fund schemes or significantly limited their contributions.[10] The EU indicator of tax burden gives a true image, because Eurostat switched to qualifying payments to the personal private pension funds as mandatory payments a few years ago.[11]

The Scandinavian type

The continental countries of Europe applying occupational pension schemes extensively.[12]

Five countries can be classified into this category (the Netherlands, Norway, Switzerland, Denmark, Sweden). A common feature of the countries is that payments to occupational pension funds, which are generally organized on a professional basis, can be regarded as mandatory. This fund scheme operates under a strong supervision by the state or under strict corporate control.

In 4 of the countries, the tax burden is high in the first place[13] – which further increases if we take mandatory payments into account. Switzerland has a different situation. In the case of the Swiss, the OECD tax burden index is relatively low, but jumps to a medium level when calculating the "adjusted tax burden." However, this level is still 5-8 percentage points behind the values of the other 4 countries. The average of the tax burden of the country group increases with 4 percentage points (to 43.3%), which means that it exceeds the level of the previous group.

The lower tax burden in Switzerland is partly explained by their unique housing system. Possessing apartments is rare amongst the population, while renting apartments is widespread, with high rent levels. The level of payments are kept low by the government and/or corporate institutions, so that such housing burden can be paid even by those with revenues falling behind the average.

Countries demonstrating a strong Anglo-Saxon influence

In opposition to the Bismarck pension system, occupational pension schemes are in place in these countries that are controlled by a supervisory agency keeping things on a not
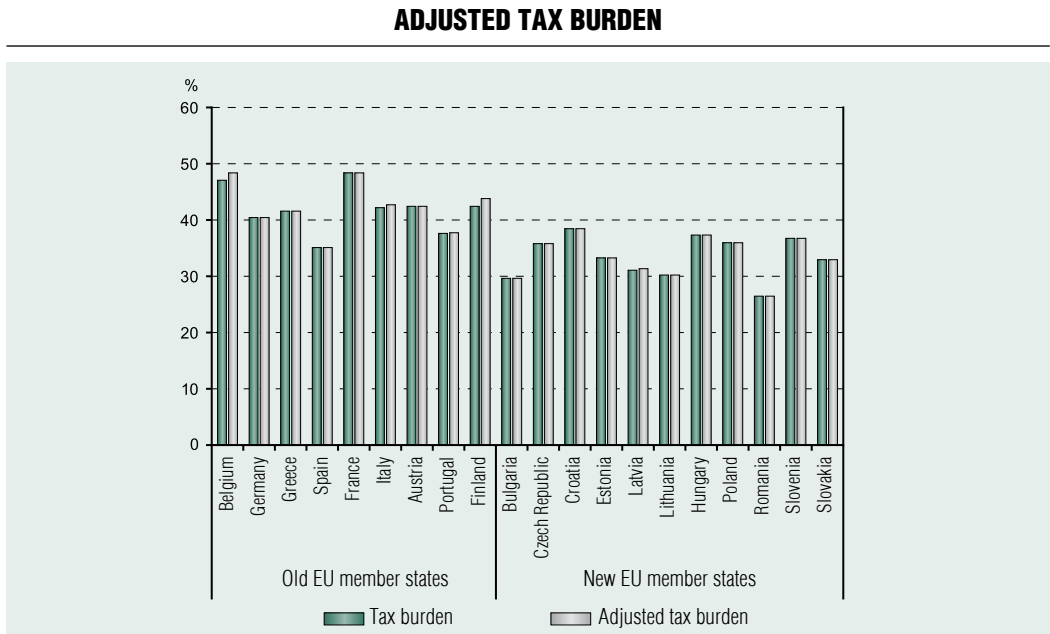
Figure 2/a

ADJUSTED TAX BURDEN

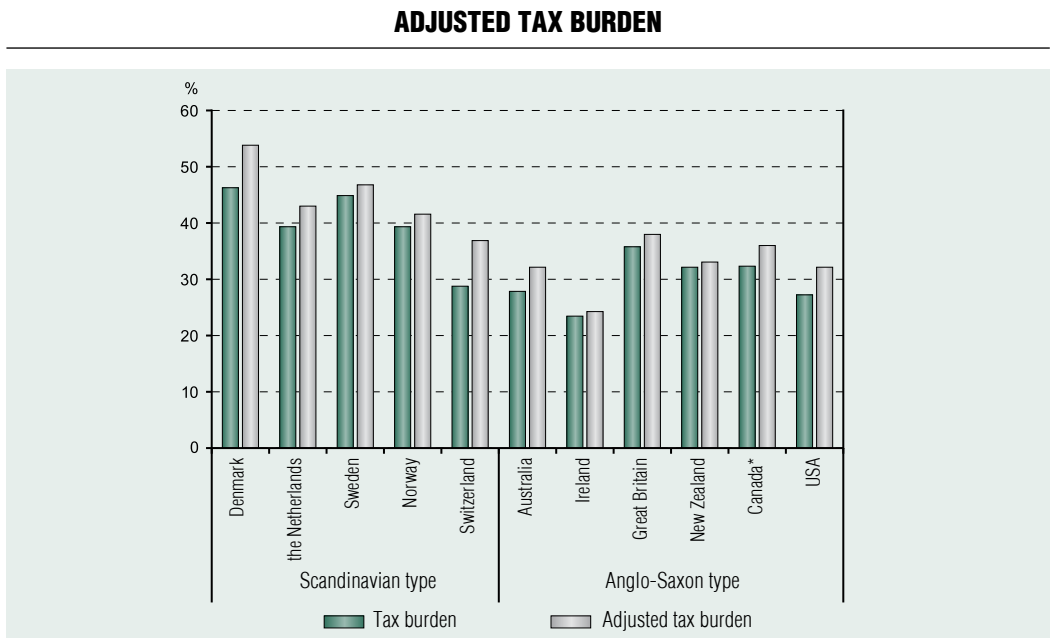

Figure 2/b

ADJUSTED TAX BURDEN

Notes to Figures 2/a and 2/b: in the course of adjustment, we added the figures of occupational pension fund contribution of Figure 1 to the tax burden – the adjusted data is an estimate.

Source: Eurostat: Government revenue, expenditure and main aggregates. http://appsso.eurostat.ec.europa.eu/nui/show. do?wai=true&dataset=gov_10a_main, OECD (2019)

Table 2

DISPOSABLE CURRENT REVENUES IN GDP PERCENTAGE

	Calculated from EU and OECD data	Calculated from the data of the adjusted tax burden
	in 2018	
State pension system (Old member states)		
Belgium	53.1	51.7
Germany	59.5	59.5
Greece	58.6	58.6
Spain	64.9	64.9
France	51.6	51.6
Italy	57.9	57.3
Austria	57.5	57.5
Portugal	62.5	62.0
Finland	57.5	56.3
Mandatory occupational pension funds		
Denmark	53.7	46.1
the Netherlands	60.9	57.0
Sweden	55.4	53.4
Norway	61.0	58.4
Switzerland	71.3	63.1
Pension system with Anglo-Saxon influence		
Australia	72.2	67.8
Ireland	76.7	75.9
Great Britain	64.4	62.0
New Zealand	68.0	67.1
Canada*	67.8	64.1
USA	72.9	68.0
State pension system (New member states)		
Bulgaria	70.2	70.2
Czech Republic	64.0	64.0
Croatia	61.5	61.5
Estonia	66.7	66.7

	Calculated from EU and OECD data	Calculated from the data of the adjusted tax burden
	in 2018	
Latvia	69.0	68.5
Lithuania	69.7	69.7
Hungary	62.6	62.6
Poland	64.0	64.0
Romania	73.3	73.3
Slovenia	63.3	63.3
Slovakia	67.0	67.0

Note: * estimate

Source: own calculation

too tight rein. Poverty policy attempts to make the (otherwise large) masses of those falling out of the system bearable. According to the traditionally calculated indicator of tax burden, these countries can be classified into the lower third of countries with medium payments. If we calculate with our adjusted indices, the amount paid by economic agents to other institutions will increase. Owing to this, they can be regarded as countries with medium payments in our system. Adjustment increases the average of the group from 28.2 to 32.5%.

After our adjustment, the ranking of countries changes in terms of tax burden. The British and their dominions' as well as the USA's ratios to GDP increase with 1-5 percentage point, and there is an even greater increase in the case of Switzerland. This way, there are only a few, exceptional countries where the value of payments is below 30%. This means that fulfilling the requirements of the European culture group doesn't come free. In the two countries with exceptionally low indicators, the values are explained by unique factors. In the case of Ireland, the profit achieved by foreign capital gives an extraordinarily high share of the GDP,[14] and the country's population is younger. In

Romania, the ratio is decreased significantly by the weight of agriculture and grey economy.[15]

If one wishes to know whether the adjusted tax burden is high or low in a given country, we consider the index below 32% low, the indicator is medium level between 32% to 38%, and ratios above 38% should be considered high. If we review the values with these limits, we can see high ratios in the case of old continental EU member states, with one exception. The exception is Spain, with a medium value. The adjusted index of the five European countries using the mandatory occupational pension system more extensively is high, with Switzerland being the only country with medium value. In the countries demonstrating a strong Anglo-Saxon influence, the adjusted indicator is medium level, with Ireland's extraordinarily low value being the exception. Out of peer new EU member states, Croatia's index is high, Bulgaria and Romania have low indices, and the rest of them can be classified into the medium category.

Figure 2 demonstrates the share of GDP provided by the disposable current revenues after deducting the adjusted tax burden. It can be seen that we received the value by deducting the values in Figure 2/a and 2/b from 100%.

FACTORS INFLUENCING THE SHARE OF PAYMENTS

THE SITUATION OF INFRASTRUCTURE. The extent of the tax burden is influenced by the infrastructural network, as well as the nature and condition of the same. For coastal states, less investments are needed for developing the transportation connections necessary for international division of labour than in the case of landlocked countries.

CENTRALISATION. Centralisation aspirations can also bear an impact on the index. Many times in large countries, a certain kind of "imperial" aspiration emerges, aiming to make the more distant parts of the country easily accessible from the capital even in spite of high costs, in order to make sure their separation aspirations don't grow stronger (for example the rapid transit train and the motorway network in the case of France and Spain).

ECONOMIC CYCLE. During downturns, tax burden is lower as a means of recovery. On the other hand, in a period of prosperity promising to be lasting, taxes are raised[16] to get revenues for reducing the existing debt.

THE BURDEN OF PUBLIC DEBT. Countries accumulating greater debt must collect more taxes due to the interests on their debts.

THE SHARE OF PEOPLE LIVING OFF AGRICULTURE. Agriculture is usually characterized by low mandatory payments on both the production side (taxes on revenues) and the consumption side (VAT, etc.). In the case of more traditional family farms, self-consumption continues to be significant even today. Infrastructure is also more limited in rural areas. A significant share of farmers keep working even after they reached retirement age, and get lower pension benefits compared to urban population.

THE SHARE OF GREY ECONOMY. In the case of an extensive grey economy, the state's possibility to levy taxes is more limited. Out of the countries subject to our analysis, the role of the second economy is above the average in the case of Romania and Bulgaria. In the case of the former, 19% of recognised GDP came from illegal sources. This value amounts to 14%[17] in the case of the latter.

REVENUES FROM MINING ROYALTIES. Presumably, these are not always indicated amongst taxes. In many cases, the royalties are collected as lump sum fees (e.g. concession fees). Significant royalty-like revenues are primarily generated in countries rich in mining resources, and especially in countries with substantial hydrocarbon mining activity. We did not analyse this factor in our study.

Mining royalties are significant in the case of Canada, Australia, the USA, Romania as well as Norway, Great Britain and Denmark (in the case of the latter three, on account of mining North Sea hydrocarbons).

AGEING OF THE POPULATION. Ageing is a common factor in the case of countries belonging to the European culture group due to the low birth rates.

This can be measured with the dependency rate. We must note that

- this rate is more favourable in countries where the birth rate was higher than the rate in Europe even in the '80s (Poland, Ireland),
- migration to former British dominions (Canada, Australia, New Zealand) from the motherland has been a significant trend for long decades now, but also from other European countries – resulting in a lower rate of old age population. A similar phenomenon can be observed in the case of the USA, too.[18]

THE IMPACT OF CAPITAL AND RESOURCE FLOWS WITHIN THE EU

- in new member states, the ratio is decreased by the significant amounts of profit achieved by Western capital (as its willingness to tax is relatively low),

- the EU's resources serving convergence allow for the development of the underdeveloped regions of Eastern and Mediterranean member states, and, thus, they relieve the state from covering the entirety of such expenses from resources collected from taxes on a temporary basis.

TAX BURDEN AND COMPETITIVENESS RANKINGS

Measuring the competitiveness of a national economy is a complex task. Usually it is not measured with a single ratio, but on the basis of the position of the given country in the ranking of national economies compiled based on a certain set of criteria as well as based on the change of such position.

Although universally the factors influencing the competitiveness of a national economy are not well defined and many times the components of competitiveness rankings are not even supported scientifically (Vargha, Németh, Pályi, 2019), but in the majority of the cases, tax burden and the tax regime also play a role, many times as an element of underlying factors.

Complex indicator systems are taken into account when compiling the rankings. Several organizations compile competitiveness rankings based on indicator systems, including the International Institute for Management Development (IMD), the World Economic Forum (WEF), the International Monetary Fund (IMF) or the Tax Foundation. The proceedings building on sets of indicators may differ from each other in several aspects. On the one hand, they can differ in terms of the composition of the set, and also in terms of the operations carried out with the indicators (Szilágyi, 2008). From the perspective of our study, the main issue out of the factors determining the ranking of a given country

is the factor whether public charges levied on wages are taken into consideration.

▌The WEF has compiled competitiveness rankings since 1979. They put productivity in the focus when determining competitiveness. They build their measurement on an indicator system classified into 12 pillars. Based on the foregoing, they provide three sub-indicators, and calculate the general competitiveness index (GCI) from these (Csath, 2019). The majority of indicators used are based on surveying opinions, and only a smaller part of them is based on a numerical value. No quantified data of charges on wages is included amongst the values measured.

▌The Swiss IMD's approach towards setting up the competitiveness rankings compiled since 1989 is similar to that of the WEF.[19] They rank countries based on the environment they are able to provide to the companies operating in their territory to ensure their competitiveness. Their method encompasses four areas, and divide each of them into five sub-areas. They use 261 indicators to establish the ranking. Two third of these indicators are based on statistical data, and a smaller share is established with surveys. One of the factors amongst the 5 analysed within the sub-area pertaining to public finances is taxation, which means that in the case of the IMD, 5% of the total score depends on the position taken by the given country in the ranking generated according to the analyzed taxation perspectives.

If we look at how large a change may be caused by taking the occupational pension into consideration, we can see that it influences approximately 1.5% of the overall score. They also rank other factors in addition to the total tax burden or the social security contributions (rate of personal income tax, tax burden of profit, burden of consumption tax, etc.)

❚ Since 2013, the Hungarian Central Bank has also been monitoring the competitiveness of the country in its reports. To that end, it interpreted the concept of competitiveness and established its own indicator system. According to the definition of the Hungarian Central Bank, "*a national economy is competitive if it utilizes its available resources optimally to attain the highest possible, but at the same time sustainable level of welfare*" (Hungarian Central Bank, 2019, p. 6) The Hungarian Central Bank measures the competitiveness of the country through more than a hundred quantified indicators. These indicators include several indices related to public charges. The macro indicator is the indicator representing tax centralisation, measuring the total tax and contribution burdens compared to the GDP. The Hungarian Central Bank's report contains the extent of the tax wedge, as the ratio of tax and contribution charges to average salary.[20] The indicator calculated from the perspective of the competitiveness of businesses is the total tax rate of businesses as a percentage of pre-tax profit, showing the tax burden of a hypothetical domestic company employing sixty people (Hungarian Central Bank, 2017).

❚ The Washington-based Tax Foundation calculated a separate tax competitiveness index (2018). More than forty factors are considered for calculating the index. With the help of these, they pay attention to the rate of tax burdens as well as the structure of taxation and tax regulation. The Tax Foundation's assessment is based on how a given economic agent assesses in the course of a specific action. Therefore, it is important to them how much money can be paid to workers and how the profit changes by upping production with one unit. This means that they consider marginal rates and average burdens equally important, and they analyse the scope of taxpayers concerned by higher rates.[21]

Taxation's impact on competitiveness is also emphasized by several pieces of literature. *Nagy* (2017) mentions the appreciation of fiscal policy in terms of competitiveness. He primarily draws attention to the structure of taxation and to keeping the marginal tax rates at a low level.[22]

What is the role of the tax burden in setting up competitiveness rankings? Although it may seem obvious at first glance that countries with lower tax and contribution rates are considered more competitive, in reality, the situation is far from being this simple. The scores received on account of taxation give one tenth or one sixth of the total scores achieved. However, there are many factors in which primarily those countries can get higher scores that have sufficient revenues with which they provide the basis for higher public expenditures (e.g. pro-rated to the GDP). What a country gains at the toll, loses at the customs.

In terms of education, infrastructure, health care etc., countries levying higher taxes can attain a more favourable position provided that they utilise the revenues collected for social purposes efficiently.

If a country applies an occupational pension system, then current statistics generally do not calculate the payments to these funds into the tax burden. As a result, they will achieve lower values in two indicators and thus a more favourable position in the ranking, one being the ratio of total tax burden per GDP and the other being the ratio of social security contributions to GDP.[23]

SUMMARY

We investigated the issue of to what extent the ratios applied in practice can be used to compare the tax burdens of different countries.

We arrived to the conclusion that tax burden ratios used currently fail to give a fair view of the share of income left for employees and employers

after all mandatory payments have been settled. The reason for this is that the contributions paid to occupational pension funds are not included in total tax burden calculations. The economic agents cannot freely dispose of the amounts payable on a mandatorily and quasi mandatorily basis to non-state schemes in a given period. These amounts cannot be used for accumulation or consumption, by neither the employers nor the employees.

Instead of the recipient of payment, we believe it is the fact of contribution (payment) that should be put into the centre of analyses. Therefore, our recommended solution is the calculation of the disposable current revenues, and the indicator of the share generated from the same.

Appendices

Appendix No. 1

PENSION MODELS

The differences between pension systems can be reviewed more easily if we introduce the two basic models.

❶ The majority of continental countries apply the pension system financed by the state and named after *Bismarck*. They only operate systems that:
- support elderly people with low incomes for a certain reason,
- provide discounted pension savings for high earners on a complementary basis.

❷ In the countries influenced by Anglo-Saxon pension traditions, there is a minimum monetary benefit provided to old-age residents or citizens by default. Theoretically the state pension system covers high earners, too, but in practice those concerned usually switch to a private pension fund. They embrace the opportunity lying in the fact that contributions to private pension funds are encouraged by the state with significant tax allowances.

Five Northern and Central European continental countries apply certain elements of the Anglo-Saxon approach. In these countries, those of retired age are financed in a two-tier system:
- on the one hand, there is an element providing minimum benefit, generally available for those who have spent a significant number of years during their adulthood in the given country. This basic benefit is gradually eliminated as one approaches the average pension level;
- on the other hand, occupational pension schemes provide benefits.

Table 3 demonstrates as a percentage of GDP
- the ratio of old-age pension pay-out and, within the same, the pay-out of private pension funds,
- the ratio of the weight of tax allowances provided for paying the pension contributions.

Table 4 demonstrates the share of mandatorily paid pension contributions as a percentage of income. The table does not contain the payments of occupational schemes not qualified by OECD as mandatory (in the case of Canada, USA, Great Britain, Ireland.[24])

Table 3

OLD-AGE PENSION PAYOUT AS A PERCENTAGE OF GDP

	State and private pension payout	Out of this, private pension	Tax allowance	Type of pension
	2015	2015	2015	
Australia	9.0	4.7	1.7	m
Austria	14.0	0.7	0.0	v
Belgium	11.8	1.1	0.2	v
Canada	7.8	3.1	1.9	v
Czech Republic	8.4	0.3		m
Denmark	11.5	2.6		q/m
Denmark		0.8		v
Estonia	7.0		0.7	
Finland	11.6	0.2	0.1	v
France	14.1	0.0	0.1	m
France		0.1		v
Germany	10.9	0.8	1.0	v
Greece	16.9	0.1		v
Hungary	9.2		0.0	
Ireland	4.7	1.1	1.0	v
Italy	17.4	1.2	0.0	v
Latvia	7.0		0.1	
Lithuania	6.7			
the Netherlands	11.2	5.8		q
New Zealand	4.9			
Norway	7.6	1.0	0.2	v/m
Poland*	11.1			
Portugal	14.0	0.7	0.0	v
Slovakia	7.7	0.4		v
Slovenia	11.1		0.3	
Spain	11.5	0.4	0.2	v
Sweden	10.1	2.9		q/m
Switzerland	11.5	5.1	1.2	m

	State and private pension payout	Out of this, private pension	Tax allowance	Type of pension
	2015	2015	2015	
Great Britain	11.2	0.7	1.2	m
Great Britain		4.3		v
USA	12.3	5.2	0.8	v
OECD	**9.5**	**1.5**	**0.6**	

Note: type of pension: m = mandatory, q = quasi mandatory, v = voluntary
* the data of Poland is from 2014

Source: OECD (2019)

Table 4

MANDATORY PENSION CONTRIBUTIONS AS A PERCENTAGE OF GROSS INCOME IN 2018

	State, employee	State, employer	Private, employee	Private, employer	Total	The effective contribution of workers earning an average income
Australia			0,0	9,5	9,5	9,5
Austria*	10,3	12,6			22,8	22,8
Belgium	7,5	8,9			16,4	16,4
Canada	5,0	5,0			9,9	9,9
Czech Republic*	6,5	21,5			28,0	28,0
Denmark			4,0	8,0	12,0	12,8
Estonia	0,0	16,0	2,0	4,0	22,0	22,0
Finland*	6,7 [a]	17,7			24,4 [a]	24,4 [a]
France	11,2 [w]	16,3 [w]			27,5 [w]	27,5
Germany*	9,3	9,3			18,6	18,6
Greece	6,7	13,3			20,0	20,0
Hungary	10,0	15,5			25,5	25,5
Ireland*	4,0	10,95			14,95	14,95
Italy	9,2	23,8			33,0	33,0
Latvia	10,0	10,0			20,0	20,0
Lithuania (2019)[25]	25,1	1,9			27,0	27,0
Netherlands	18,0	0,0	7,7 [w]	14,8 [w]	x [w]	25,6

	State, employee	State, employer	Private, employee	Private, employer	Total	The effective contribution of workers earning an average income
Norway	7,6	10,5	0,0	2,0	20,1	20,1
Poland*	11,3	16,3			27,5	27,5
Portugal	7,2	15,5			22,7	22,7
Slovakia	4,0	14,0			18,0	18,0
Slovenia*	15,5	8,9			24,4	24,4
Spain	4,7	23,6			28,3	28,3
Sweden	7,0	10,2	0,0	4,5[26] [w]	21,7 [w]	21,7
Switzerland	4,2	4,2	6,25 [a,w]	6,25 [a,w]	20,9 [a,w]	16,6 [a]
Great Britain	12,0 [w]	13,8 [w]			25,8 [w]	20,4
USA*	6,2	6,2			12,4	12,4

Comment: "A" and "w" mark average values, in the case of "a", the extent of the contribution depends on age, while in the case of "w" in depends on the level of wage. In the countries marked with an asterisk (*), the contribution revenue also finances other purposes.

Source: OECD (2019)

THE SWEDISH PENSION SYSTEM

The Swedish pension system set as an example pension system by IMF demonstrates the overlaying and interconnectedness of state and private pension systems well.

The Swedish state pension system is part of the state social security system. The components of the state pension system are the pension determined based on income, the premium pension and the guaranteed pension. The Swedish state pension system operates along a mixed principle. Part of the contributions paid to the system based on mandatory contribution payment are transferred to an individual investment accounts system operated on a pay-as-you-go basis. Another part of contributions is accumulated in a pay-as-you-earn system. Occupational pension plans have also earned some popularity as complimentary schemes, which promise defined pension benefits based on the contributions paid.

CALCULATING THE PENSION CONTRIBUTION

They deduct 7% pension contribution from the gross wage of the employee. The employer pays 17.21% of this gross wage as contribution. This means that by deducting the 7% contribution burden from the personal income, we get the net income, and by comparing the amounts of the individual and employer payments to this income, we get an 18.5% rate. Out of the 18.5% rate, 16% goes to the payment-based individual

accounts payment scheme (pay as you go), and 2.5% goes to the individual accounts pay as you earn system, called premium pension. The personal contribution is not collected if the income does not reach 4% of the average income. There is also an upper income limit, 113% of work income, over which the individual is not required to pay the personal contribution. In this case, the employer does not pay contribution either, but it has to pay tax to the central budget at a rate equaling the contribution.

Those who cannot work in regular manners receive certain supplements on their accounts. Such reasons include raising children with disabilities or military service.

Income-based pension

This part of the system operates as pension insurance. The pension is determined based on the total income earned during the worker's lifetime. They register the amounts generated from contribution payments on individual accounts. The registry works based on a credit system.

If an individual deceases before reaching retirement age, the amount on his account is divided up amongst the surviving members of his generation. (The amount kept on the account may not be inherited.)

When retiring, the amount collected with credits is exchanged into an annuity. When determining the annuity they use the retirement age and the life expectancy as basis. They apply a 1.6% real interest rate when calculating. The pension of pensioners is increased in line with nominal average income, reducing the rate with the 1.6% value applied when calculating the allowance. The system also incorporates a balancing mechanism. If the incoming contributions are less then the value of pension pay-outs, the balance of

individual accounts are reduced in order to create balance.

Premium pension

The premium pension plan works on a pay as you earn basis. The contributions paid are deposited in individual accounts of pension savers. The amounts paid will be invested into a fund chosen by the saver. The basis of pension will be given by the accumulated payments and the yields of the same. The risk arising from the investment is to be borne by the saver.

Guaranteed (basic) pension

The guaranteed pension is the lowest pension in the individual accounts scheme. It may only be claimed over the age of 65. The guaranteed pensions are financed by public tax revenues.

Eligibility criteria for the pension: the state pension can be claimed from the age of 61. Guaranteed pension is only paid to people over the age of 65, preconditioned on a minimum three years residency in Sweden. Full guaranteed pension is only available after 40 years of residency in Sweden, in the case of residency for less than 40 years, a pro-rated part of the total guaranteed pension is paid to the individual.

Occupational pension scheme

Approximately 90% of workers belong to occupational pension schemes. The occupational pension scheme is not part of the mandatory state system, it is of supplementary nature. The conditions are largely regulated by collective bargaining agreements between the players of the labour market (Government Office of Sweden, 2016).

Notes

[1] Taxation Trends Report 2018 – European Commission

[2] Their ratio to the EU-28 was 1.3% GDP in 2016. Naturally, the average is generated in a manner that these values are significantly higher in the case of some countries (e.g. Greece, Portugal, France).

[3] It is prepared by countries using currencies other than euro, on an annual basis.

[4] The payments to private pension funds in countries in transition have been calculated into the index for some years now.

[5] In certain cases, the name of the countries are indicated by the licence plate country code in the tables. In the absence of a sufficient database, we did not analyse non EU-member Western Balkan countries.

[6] An important difference between the two is that while in the case of occupational pension funds, when there is a decrease in accumulated funds (for example due to a drop in share prices), the pensions of the people retiring at that time will decrease, the pension allocated by state systems do not decrease in the event of a drop in share prices.

[7] In the classification of the OECD, the fund is voluntary if the employers themselves can decide whether they set up such a fund for their workers.

[8] Individuals may transfer from one occupational pension fund to another when they switch jobs.

[9] A peculiarity of the situation is that the OECD publishes the distorted tax wedge index in its annually released 500 page-long publication (Taxing Wages), at the some time, the values giving a true and fair view are available on its website for a short period of time (indicating the latter as „non-tax Compulsory Payment"). Of

course, the distortion is also similarly present in the countries where occupational pension funds collect contributions classified by the OECD as non-compulsory. See Giday (p. 397).

[10] See J. K. Bielecki and Mark Allen: *Making Sense of Pension Reform* 201; and Csaba Lentner: *Közpénz-ügyek és Államháztartástan, 2013 [Public Finances and Public Finance Management, 2013].*

[11] Where contributions are collected by the state.

[12] We qualified a country as such if the ratio of employer's payments to GDP exceeded 1.5%.

[13] This is also verified by international tax burden indices (OECD, Eurostat).

[14] Török, L. page 275

[15] This influence also prevails in the case of Bulgaria.

[16] Or kept at appropriate levels.

[17] According to data from 2009.

[18] If the old age ratio is lower in a country subject to our analysis, then the ratio of pension and health care expenses to GDP could also decrease with 2-3% (in the case of a similar level of benefits). Therefore, the amount of contributions can also decrease in their case.

[19] The WEF and the IMD were established when the Swiss institution split into two in 1989. The experts according to whom the subjective opinions formulated about the given economic factor are largely sufficient in themselves for generating the competitiveness ranking stayed in one of them (WEF). The other half became IMD, building the evaluation on data in cases where statistical and other similar data are available.

[20] In terms of tax burden and the tax wedge indicator, they use the values of organizations criticised in our study (e.g. OECD).

[21] Hungary has a better than average position in the ranking of this institution. On the one hand because of its low profit tax rate, and on the other hand because the marginal tax rate is low due to the single-rate personal income tax.

[22] In his study, he claims that even minor changes in taxes have a significant impact on the behaviour of economic operators. Tax regulation by the state affects companies through several channels. One of such channels is the extent of public charges defining the totality of wage costs. He claims that tax competitiveness does not balance the impact of other competitiveness factors fully by all means, but its impact is nevertheless significant.

[23] In certain cases, there may also be indicators in addition to the two mentioned before that measure the overall extent of labour-related burdens, and the country will have a lower (and, thus, more favourable) score in such ratio, too.

[24] The contributions to occupational pension funds mean an extra burden of 9% in the USA and 9.4 percentage point in Great Britain on wages in the case of (more frequent) plans built on defined benefit (DB) (the financing logics of these schemes can be compared with state systems the best). Source: FINNISH CENTRE FOR PENSIONS (2012).

[25] As the payment is given as a percentage of the so-called super gross income, we recalculated it as a percentage of the gross income

[26] See Appendix No. 2

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