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COMPARISON OF TAX BURDEN ON FARMS IN SELECTED US STATES

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Abstract

This paper deals with the comparison of the tax burden of selected US States within the framework of two taxes - income tax and sales tax. When drawing up this issue, the authors were led by the idea that there may be significant differences among particular states, so they chose as the objective to identify fiscally attractive areas. The quantification research of tax burden on model farms in 12 US states – Corn Belt was carried out in order to meet the objective. To the three groups of taxpayers (single, married and head of household) were applied federal and state taxation on natural persons income, social security and health insurance contributions, and sales tax. The cross-sectional analysis is focused on 2012. The results of the comparative analysis led to the identification of fiscally attractive areas of agribusiness (South and North Dakota - regardless of the taxpayer status, Ohio) and to the confirmation of the assumption that there are significant differences between the states surveyed – particularly as regards the sales tax where a deviation of tax liability from the lowest tax burden of 74.99% was identified.

Keywords: agriculture, U.S. tax system, income tax, self employment tax, sales tax

INTRODUCTION

Each tax system is based on certain principles. The basic requirements were defined in the 18th century by Adam Smith in his An Inquiry into the Nature and Causes of the Wealth of Nations where Smith presented the tax canons that define these principles (Smith, 2001). These principles were further developed by Stiglitz (1997). According to him fair tax must be economically efficient, administratively simple, flexible, transparent and fair. Both views, which are very similar, have merged, and thus the principles of taxation got the current form. Consequently, the current basic requirements look like this (Bervidová and Vančurová, 2007): efficiency of taxation, tax fairness, political transparency, legal excellence, simplicity, flexibility and stability. Široký (2008) states that current economists differ in the number of principles and in the definitions of their content, but they are unanimous in emphasizing the principle of fairness and efficiency.

As regards the USA, it is important to realize that the American tax code is one of the most complex documents worldwide, so it is clear that the US tax system corresponds to this fact

(Láchová, 2007). The tax legislation can be divided into executive and legislative. Executive part is represented by the president, the White House and the Department of the Treasury. Legislative part is represented mainly by the Congress. An important role have also the tax commissions, which consist of the Budget Committee and Finance Commission (Nerudová, 2009).

Like other developed countries of the world, the United States also divides taxes into direct and indirect. Direct taxes include income taxes and property taxes. A specific feature of the tax system in the US is the lack of Value Added Tax (VAT). Instead of VAT there is a very varied range of indirect taxes, from general consumption taxes in the form of turnover tax to the tax on coffee, luxury tax, mining tax or sin tax, the purpose of which is to reduce the level of dependence on alcohol, cigarettes and even gambling (Láchová, 2007). USA is also characterized by an enormous number of exceptions, which generally reduce the quality of tax systems. This fact also highlighted the American journalist Zakaria (2012), who appreciates Estonia and Czechia, which, in his words, innovated direct taxes and introduced a flat tax. Zakaria (2012) also criticized the complicated multi-stage system of taxation. The United States is a federal state and this is demonstrated in the entire tax system, which is peculiar because some taxes have basically three levels of taxation, namely: federal, state, and in some cases even municipal. According to Láchová (2007), the tax legislation at the federal level is by no means variable, so in all states of the federation the tax burden for residents is the same and follows the principle of fairness. The taxes at the state and local level do not follow the mentioned principle. The reason is the effort of some states or even local municipalities to create a competitive environment in order to attract tax bases (incomes, turnovers of companies), as they need to increase the attractiveness of their environment. Within the federal tax on income of individuals it is crucial to define the so-called Filing status to determine tax obligations. This status is used in filling out tax return form. In the USA we can discern five filing statuses – single, married filing jointly, married filing separately, head of household, qualifying widower/widow (U.S. Tax Center, 2015).

Approximately 1/3 of the US territory, i.e. The total area of 922 million acres (373 million hectares) of agricultural land is being farmed by 2.2 million farmers. Less than half (44%) of farmland are fields, almost the same area occupy pastures and the rest are mostly forests. The vast majority of agricultural production (up 84%) is provided by family farms (Czech Trade, 2017). In the US Midwest, there is the so-called Corn Belt with fertile soil, rich in organic substances, warm climate and sufficient rainfall, which are ideal conditions for growing corn. This belt includes the following states: Indiana, Illinois, Iowa, Missouri, Nebraska, Kansas, Michigan, Ohio, and Minnesota. According to other definitions the part of this area are also South Dakota, North Dakota and Wisconsin (USDA, 2012).

In order to create a sound theoretical base of the research it is also necessary to define the term „farm". According to U. S. Environemntal Protection Agency (2013) it is the place where they were produceded or sold agricultural products worth at least 1,000 USD per year. As stated Hoppe and MacDonald (2013), it can be better to classify farms on the base of the value of gross sales (than of the area of farms), because this indicator measures economic activity, ie. not only inputs in the form of land, but also work, equipment and final outcomes as well as governmental transfers, incomes from lease agreements etc. The biggest representatives of farms are small family farms (with sales to 249,999 USD), whose number is more than 2/3 of the total number of farms engaged in growing corn. Large family farms are represented by 15%, very large family farms by 14% and non-family farms by 5%. In terms of sales the family farms produce 78% of value of the total sales of all farms (including non-family). The average size of small family farms is 231 acres (U. S. Department of Agriculture, 2007). In the USA, farmers can use basically three option forms of entrepreneurship: sole proprietor, partnership or corporation. The simplest form of business is a Sole Proprietor – it is the business of the individual, where the law does not separate the person from the business activity. This kind of business has not legal entity, the farmer is responsible for his economic assets and debts arising from the business, he also decides about his business and his earnings are taxed under the income tax on individuals (Entrepreneur Media, 2016). As reported by O'Donoghue *et al.* (2011), the percentage of sole proprietors in the total number of farms in the long term amounts around 87%.

Some researches analyze the relationship between government spending on the one hand and the performance of the agricultural sector on the other hand (eg. Bielik *et al.*, 2014). However, this contribution will focus on the opposite relationship, where the state will act as a recipient of taxes and agricultural entity (farm represented by sole proprietorship) will be in the position of the payer.

The payer must monitor his competitiveness and this one, according to Soukup and Šrédl (2011), is closely linked with achieving balance and profit maximization under the condition of a particular type of competition.

The authors of this article looked into the status of research related to the topic concerned, but similar comparisons of the tax burden on farmers with the above-mentioned taxes were not published in the Web of Science and Scopus scientific databases. The issue of the tax burden on agricultural farms in the US is described, for example, in an article examining the impact of tax reform on agricultural households (Beckman *et al.*, 2018), an article examining the amount of agritourism income tax (Das and Rainey, 2010), an article mapping tax on greenhouse gas emissions (Golub *et al.*, 2009) or an article investigating the effect of introducing the fertilizer tax as Sub-regional US policy while expanding biomass production (Egbendewe-Mondzozo *et al.*, 2013).

MATERIALS AND METHODS

The objective of the paper is to present the results of comparison of the tax burden on farmers' production in selected US states, with emphasis on the income tax burden and sales tax. The results of the comparison lead to the identification of fiscally attractive areas in terms of agricultural business, because according to Gebeltová and Pletichová (2012), primarily quality agricultural land is and will be an appealing investment. The research focuses on the taxation of natural persons who are engaged in agricultural business in the USA. Due to the variability of data sources, the unifying factor is data availability for 2012. The study is a part of the long term project comparing the agri-business tax burden in the USA and EU countries based on the cross-section data analysis keeping the year 2012 as the reference one. The comparison is made on case studies conducted on role model farms. Compilation of the model farms has been done with the help of statistics Economics Resource Service (ERS), U. S. Department of Agriculture (USDA) and U. S. Department of Commerce (USDC). On these model farms are applied models of taxation on income of individuals as representatives of direct taxes and sales tax, which represents indirect taxes.

Taxable income was choosen on the basis of determined median farm income, after deducting all costs. It is therefore an adjusted gross income. For the purpose of the research there were determined three types of taxpayers: single, childless, married farmer who submits tax returns separately, the wife carries out gainful activity, applies standard deductions and (they have no children together/they have two children), divorced farm owner, who is head of household and has two children.

At these farmers was carried out an analysis of federal and state degree of personal income tax in 12 US states, which are located in the so-called Corn belt. For calculation was used progressive tax rate, along with designated deductions, non-taxable amounts and other constructional elements of the tax for the year 2012. Revenue was further burdened by tax on self-employment, which is the payment of social security and health insurance for self-employed. Its rate is linear and paid at the federal level.

The second tax included in this research is the sales tax. The basis for calculating was the average size of farms sown area, yield from an acre in area and the market price for a given unit of corn in a given year. On the calculated value was then applied linear tax rate in individual states, because this tax is not applied at the federal level. Quantitative research is based on calculations of the tax burden on taxpayers of model farms in individual states, taken from the view of the income tax including also the tax on self-employment and also in terms of sales tax. This quantitative research leads to establish attractive areas in the context of the above mentioned taxes.

The authors expect that there will be differences in both the income tax and the sales tax among the Corn Belt states, therefore the above-mentioned methodical procedure leads to verifying the assumption that the tax burden on farmers in individual states shows significant differences (both income tax and the sales tax) and it is therefore possible to identify fiscally attractive areas in terms of agricultural business. As a significant difference is considered the deviation higher than 10% of the chosen basic base.

RESULTS AND DISCUSSION

Based on the above mentioned facts prevail, according to a legal form of business in the US agricultural sector, especially individual entrepreneurs. The average farm size is 231 acres, which represents the size of average small family farms that most represent the type of farms in relation to corn production. Median total income of the farm after deducting the costs is 68,298 USD. The yield was 123.4 bushels/acre and the price per bushel reached up to 7.40 USD. In the American households (i.e. Farms) live in average two children. Therefore the model farm can be defined as follows: family farm founded by a natural person in the Corn Belt. The farmer reached gross income after deducting expenses related to business activities 68,298 USD. The rate of social insurance for entrepreneurs is 10.4% and health insurance 2.9% (total 13.3%). The farmer decided to use the standard deduction. Farm size is 231 acres, the yield is 123.4 bushels/acre and the price per bushel amounted to 7.4 USD. During the year, the farmer received in inheritance proceedings the sum of 5,000 USD (revenues from inheritance are exempt from personal income tax).

Income tax on natural persons

The first analyzed tax is a tax on income of natural persons. In the case of state taxes the amount of gross income was first adjusted to the standard deduction (if the state allows this adjustment) and the nontaxable amounts of the taxpayer. In the case of a taxpayer with children there was deducted a nontaxable amount per child – a dependent person (in this case the nontaxable amount per child multiplied by two). Since the farmer does not aply for joint taxation of married couple, he cannot apply nontaxable amount for his wife. The same applies in the case of federal taxes. After deduction a taxable income was obtained, to which was applied a progressive tax rate by individual states and the status of the taxpayer. Exceptions are Indiana, Illinois and Michigan, where the state tax rate is uniform, and South Dakota which does not collect the tax from income of natural person. The result is a tax burden at the state level.

Calculations of federal tax were marked by reduction of gross income due to standard deductions according to the status and nontaxable amounts of the taxpayer again depending on the number of applying people. The farmer can not use personal deductions because his wife is applying standard deductions. In addition, from federal tax can be deduct half of the tax on self-employment. On the final amount of taxable income was applied progressive federal income tax on natural persons according to the status of the taxpayer. The width of the intervals of tax margins differ in relation to individual groups. On resulting income tax obligation can be applied at the federal level deduction for children. After the deduction to which is entitled the husband with two children and a head of household with two children, the final tax liability of the federal income tax results. At the level of federal tax there is also already mentioned self-employment tax (SET). Its rate is linear. The obligation of federal taxes is the same in all states depending on the status of the taxpayer, because the rates, deductions and nontaxable amounts for individual taxpayers applied at the federal level across the United States are the same. Therefore the resulting tax liability is most influenced by the rate of state income tax. After summarizing state taxes, federal income tax and self-employment tax was determined the total burden on the income of farmers in the individual states included in the Corn Belt.

In the case of the State of Illinois the calculation of state income tax on farmers is uncomplicated, because there is no different status of taxpayers and the tax rate is a flat rate of 5% of taxable income. Standard deductions from gross income in this State cannot be deducted. In contrast, the farmer can apply nontaxable income in the amount of 2,000 USD, and even for each child, which in the final sum virtually determines the amount of state tax. When calculating federal income tax the payer may utilize a wider range of adjustment of gross income. This does not concerns only the standard deductions, nontaxable amounts, but also half of the tax on income from dependent aktivity. Each taxpayer applies his assigned standard deduction according to his status and nontaxable amount of 3,800 USD, which can be again applied on each child. Tax rates are

I: *Tax burden on farmers in the State of Illinois*

Tax liability	Status of the farmer			
	Single	Husband without children	Husband with two children	Head of household with two children
State income tax	3,315 USD	3,315 USD	3,115 USD	3,115 USD
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	21,931 USD	21,931 USD	19,131 USD	16,127 USD

Source: own calculations

already progressive, and depend upon the status of the taxpayer. Farmer with children can claim a tax deduction for each child, up to 1,000 USD. In the case of the head of household the taxpayer may deduct the deduction in full worth 2,000 USD. In the case of a husband with children the limit amounts in gross income for the application of deduction are already exceeded and the taxpayer can only claim the amount of 350 USD per child. The tax on self-employment is uniform, amounting to 13.3% of gross income. After comparing taxpayers without children it is obvious that their tax obligation is identical, because it depends on state tax, which is applied equally to all taxpayers. When comparing taxpayers with children it is evident that a lower tax burden will feel a farmer with the status of head of household with two children, totaling 16,127 USD (Tab. I). This is mainly caused by higher amount of the standard deduction and application of higher deduction for children.

Indiana is another of the states, which also uses a single rate of tax, amounting to 3.4% of taxable income for all taxpayers. In this case there is a very similar situation as in the previous case, the State of Illinois. Here, too, the farmer cannot claim the standard deduction. Amount of the nontaxable income is only 1,000 USD, which again the farmer with two children can deduct three times. Burden of federal taxes has exactly the same course as in the State of Illinois. After comparing childless taxpayers we can see that their tax liability is again the same. This is the result of state taxes applied in the same manner to all taxpayers in the amount of 2,288 USD (Table II). By comparing taxpayers with children we can detect a lower tax burden on head of household with children. His tax liability on income is in the amount of 15,232 USD (Tab. II).

Situation in calculating state taxes in Iowa is already quite different from the previous two cases. Here the farmer applies his status in filling out tax returns. Husband deduces from gross income different amount of standard deductions (4,590 USD) than unmarried taxpayer (1,860 USD). Nontaxable amounts are the same for all taxpayers, $ 40 per taxpayer and dependents. The tax rate is already well progressive and the taxable income of the farmer can pass through 9 tax brackets. This is the case of single farmer, whose state income tax is the highest in this state. Also farmer as head of household passes his taxable income across all tax brackets and the state tax burden is the second highest. As noted above, the federal taxes are the same throughout the US and thus the farmers here are burdened as in previous cases. When comparing farmers without children – means single and married, we can see in total burden on income subtle differences. Incomes of single farmer are burdened with total taxes in the amount of 22,819 USD, while the income

II: *Tax burden on farmers in the State of Indiana*

Tax liability	**Status of the farmer**			
	Single	**Husband without children**	**Husband with two children**	**Head of household with two children**
State income tax	2,288 USD	2,288 USD	2,220 USD	2,220 USD
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	20,904 USD	20,904 USD	18,236 USD	15,232 USD

Source: own calculations

III: *Tax burden on farmers in the State of Iowa*

Tax liability	**Status of the farmer**			
	Single	**Husband without children**	**Husband with two children**	**Head of household with two children**
State income tax	4,203 USD	3,984 USD	3,978 USD	4,196 USD
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	22,819 USD	22,600 USD	19,994 USD	17,208 USD

Source: own calculations

of the husband without children is taxed in the amount of 22,600 USD (Tab. III). Head of household is less burdened than the husband with children. The causes are the same as in previous states – higher deduction and a higher deduction for children.

South Dakota is one of the states of the Corn Belt, which does not claim the state income tax. Tax liability consists only of taxes at the federal level (Tab. IV).

Another state which as regards state income taxation makes difference among taxpayers is Kansas. The amounts of standard deduction amount to 3,000 USD for singles and heads of household, and 6,000 USD for a husband. The taxpayers can claim personal allowances in the amount of 2,250 USD for themselves and for each dependent child. The rate is progressive and consists of three tax brackets in which income is taxed. Intervals of tax brackets for married couples are more than twice higher than intervals for singles and heads of households. Therefore, the income of farmers in the position of husband (with or without children) pass only two tax brackets. For these reasons the state burden on income is the lowest for farmers applying status of married couples with children 2,647 USD, compared to the highest state tax paid by single farmer in the amount of 3,594 USD (Tab. V). Husband with children has the lowest state tax, however federal burden cause that in the overall assessment he falls to second place. Again there will be the lowest tax for the head of household.

Michigan, as well as Indiana and Illinois again uses a single tax rate (ie 4.35%). Standard deductions are not implemented. The personal

IV: *Tax burden on farmers in the State of South Dakota*

Tax liability	Status of the farmer			
	Single	Husband without children	Husband with two children	Head of household with two children
State income tax	0	0	0	0
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	18,616 USD	18,616 USD	16,016 USD	13,012 USD

Source: own calculations

V: *Tax burden on farmers in the State of Kansas*

Tax liability	Status of the farmer			
	Single	Husband without children	Husband with two children	Head of household with two children
State income tax	3,594 USD	2,928 USD	2,647 USD	3,304 USD
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	22,210 USD	21,544 USD	18,663 USD	16,316 USD

Source: own calculations

VI: *Tax burden on farmers in the State of Michigan*

Tax liability	Status of the farmer			
	Single	Husband without children	Husband with two children	Head of household with two children
State income tax	2,810 USD	2,810 USD	2,488 USD	2,488 USD
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	21,426 USD	21,426 USD	18,504 USD	15,500 USD

Source: own calculations

allowance is equal to 3,700 USD, which may apply the farmer himself and his children. Since there is a linear tax rate and for all taxpayers the same, again, the state tax depends essentially on the amount of the personal allowance, which in the case of a taxpayer with a child is multiplied by three. After comparing the amount of state taxes for single and husband without children, it is clear that the tax is the same (coincidently as in the states of Indiana and Illinois) in the amount of 2,810 USD (Tab. VI). Similarly, there is the same state tax on the head of household and husband with two children.

The federal tax is for individual taxpayers again at the same level as in previous cases. Farmer as head of household will be therefore burdened with a total tax of 15,500 USD, husband with children in the amount of 18,504 USD, husband without children and single farmer in the amount of 21,426 USD (Tab. VI).

In the State of Minnesota the standard state tax deduction for singles and heads of households is in the amount of 5,950 USD, and for husbands even in the amount of 11,900 USD (Tab. VII). The personal allowance is equal to 3,800 USD per taxpayer and a child. Taxpayers with children can deduct total personal allowance 11,400 USD. The rate is progressive and consists of a total of three tax brackets in which income is taxed. Intervals of tax brackets for married couples are different from intervals of brackets for singles and heads of households (similarly like in Kansas). Therefore, the income of a farmer in the position of husband (with or without children) will be taxed only in two tax brackets. For these reasons, the state burden on incomes will be the lowest in case of farmers applying status of married couples with children. In contrast, the highest state tax is paid by single farmer. The calculation of federal tax again demonstrates wider application of deductions, both standard and half tax from self-employment.

From all of the above and below mentioned states Missouri currently has the most brackets for progressively taxed income at the state level. Brackets and their respective intervals are the same for all of the taxpayers and there are a total of 10. The last bracket when the income exceeds 9, 000 USD is burdened by 6% tax on taxable income. Thus, the incomes of individual farmers will be taxed in all tax brackets. Standard deductions are the same as in the state of Minnesota – 5,950 USD for farmers claiming the status of single and head of household, and 11,900 USD for husbands. The amount of personal allowance is 2,100 USD per taxpayer and 1,200 USD for each child. The highest state tax is paid by single farmer (Tab. VIII).

In Nebraska the taxpayer may apply the same high standard deductions as in Missouri and Minnesota. Tax-free amount is in this field for all taxpayers and dependents the same, however,

VII: *Tax burden on farmers in the State of Minnesota*

Tax liability	Status of the farmer			
	Single	Husband without children	Husband with two children	Head of household with two children
State income tax	3,725 USD	3,120 USD	2,584 USD	3,189 USD
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	22,341 USD	21,736 USD	18,600 USD	16,201 USD

Source: own calculations

VIII: *Tax burden on farmers in the State of Missouri*

Tax liability	Status of the farmer			
	Single	Husband without children	Husband with two children	Head of household with two children
State income tax	3,390 USD	3,033 USD	2,889 USD	3,246 USD
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	22,006 USD	21,649 USD	18,905 USD	16,258 USD

Source: own calculations

it is the second lowest after Iowa, i.e. 123 USD. There are four intervals of tax brackets, which vary depending on the status of the taxpayer. In all cases, farmers income passes all brakets. Low level of the personal allowance causes very little difference when comparing single taxpayers and married taxpayers. Federal tax again will cause that the least burdened income is the income of farmer with status – head of household (Tab. IX).

Farmers' incomes in the state of Ohio are in different groups equally taxed at progressive tax rate. For them are valid equal intervals taxed at the same rate for each bracket. The personal allowance amounts to 1,650 USD. After adding the obligation arising from the payment of federal taxes, it is clear that the total burden on income is same for farmers with status single and husband without children. The burden on income of farmers with children is not equal. Farmer – husband with children pays higher income tax than a farmer – head of household (Tab. X).

North Dakota has among the Corn Belt states one of the lowest taxes. This is caused by wide intervals of tax brackets, which in this state amounts to 5. The last of them taxes income exceeding 388,350 USD. Obviously no one of taxpayers reaches this bracket. Incomes of singles will be taxed in the first two brakets and the income of the husband will be taxed only in the first bracket, which range is from 0 USD to an amount not exceeding 59,100 USD. Even here will be applied the standard deduction in the amount pertaining to the particular category of taxpayer. Nontaxable amounts are the same for all categories – 3,800 USD per taxpayer and dependent person, i.e. child. After inclusion of the federal tax it is apparent that North Dakota

IX: *Tax burden on farmers in the State of Nebraska*

Tax liability	Status of the farmer			
	Single	Husband without children	Husband with two children	Head of household with two children
State income tax	3,496 USD	2,329 USD	2,313 USD	3,479 USD
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	22,112 USD	20,945 USD	18,329 USD	16,491 USD

Source: own calculations

X: *Tax burden on farmers in the State of Ohio*

Tax liability	Status of the farmer			
	Single	Husband without children	Husband with two children	Head of household with two children
State income tax	2,139 USD	2,139 USD	2,003 USD	2,003 USD
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	20,755 USD	20,755 USD	18,019 USD	15,015 USD

Source: own calculations

XI: *Tax burden on farmers in the State of North Dakota*

Tax liability	Status of the farmer			
	Single	Husband without children	Husband with two children	Head of household with two children
State income tax	1,188 USD	794 USD	679 USD	974 USD
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	19,804 USD	19,410 USD	16,695 USD	13,986 USD

Source: own calculations

is in fact the second state with the lowest tax burden on all groups of taxpayers.

The last monitored state is Wisconsin (Tab. XII). Farmers‘ incomes are taxed differently according to the status and will be taxed up to the level of the fourth bracket. So they will not pass all five brackets. In the analysis it can be observed that Wisconsin allows taxpayers to deduct high standard deductions – the highest among all states of the Corn Belt. The allowance is here relatively low (700 USD). After the application of progressive tax rate is obtained the final amount of state tax burden. Despite the fact that the amounts of standard deductions are so high and significantly reduce the taxable income of the taxpayer, the final tax burden on all taxpayers is relatively high. It is mainly caused by low levels of nontaxable amounts at the state level that has not been adequately compensated by standard deductions.

Sales Tax

The research continued at the level of sales tax. In the USA is not paid value-added tax, but General consumption tax. Among these taxes is also so called Sales tax. This tax is under the responsibility of individual states. For purposes of calculation the tax base is determined in relation to the selling price of corn, corn yield, and the average size of farm area.

The tax base is therefore calculated according to the assignment of model farm as follows:

*Tax base = 7.4 USD * 123.4 bushels / acre * 231 acres* (1)

Tax base = 210,939.96 cca 210,940 USD

The tax, which burdens on sales in individual states, is calculated as follows:

XII: *Tax burden on farmers in the State of Wisconsin*

Tax liability	Status of the farmer			
	Single	Husband without children	Husband with two children	Head of household with two children
State income tax	3,522 USD	2,934 USD	2,843 USD	3,431 USD
Federal income tax	9,532 USD	9,532 USD	6,932 USD	3,928 USD
SET	9,084 USD	9,084 USD	9,084 USD	9,084 USD
Total burden on income	22,138 USD	21,550 USD	18,859 USD	16,443 USD

Source: own calculations

XIII: *Ranking of states according to the amount of sales tax*

US state	Tax base (USD)	Tax rate (%)	Tax liability (USD)	Deviation from the first in the sequence (%)	Ranking
South Dakota	210,940	4	8,438	0	1.
Missouri	210,940	4.225	8,912	5.62	2.
North Dakota	210,940	5	10,547	24.99	3.–4.
Wisconsin	210,940	5	10,547	24.99	3.–4.
Nebraska	,940	5.5	11,602	37.50	5.–6.
Ohio	210,940	5.5	11,602	37.50	5.–6.
Iowa	210,940	6	12,656	49.99	7.–8.
Michigan	210,940	6	12,656	49.99	7.–8.
Illinois	210,940	6.25	13,184	56.25	9.
Kansas	210,940	6.30	13,290	57.50	10.
Minnesota	210,940	6.875	14,502	71.87	11.
Indiana	210,940	7	14,766	74.99	12.

Note: first in the order = 100%.
Source: own calculations

*Sales tax = tax base * tax rate for the mentioned state in%* (2)

As it is evident from Tab. XIII, the lowest sales taxes will burden the taxpayers of South Dakota, only 8,438 USD. This is due to the lowest tax rate of 4%. Folows Missouri that burden the sales by 4.225%. States with the same tax rate are in the same order respectively. It is North Dakota, Wisconsin, Nebraska, Ohio, Iowa and Michigan. The least favorable conditions in terms of tax burden on sales taxes provides Indiana, where the sale is taxed at 7% rate, which represents in financial statement 14,766 USD.

Evaluation of results

After determining the total burden on the income it can be established the order of the states according to the amount of the burden on individual taxpayers (Tab. XIV and Tab. XV).

From the ranking (Tabs, XIV, XV) it is evident the lowest tax burden on farmers farming in South Dakota, regardless of status, which they apply. It is caused mainly by the fact that South Dakota does not claim any income tax at the state level. Therefore the farmers pay only federal taxes – income tax and self-employment tax. Farmer with status of head of household with two children is burdened with the lowest levy. Irrespective of the status of the taxpayer another state with the least tax burden on farmers is North Dakota. The main reason is particularly low rates of taxation in broadly defined intervals of tax brackets in the case of state income tax. At this level, the farmer may apply even high deductions which reduce his taxable income. The third of the states with the lowest incomes tax is Ohio. As in the case of South Dakota and North Dakota – for all payers.

In order to determine the significance of differences between states in ranking, in the tables were calculated variations in income from the lowest tax burden. The most noticeable difference in taxation was recorded in the status – head of the family, where between the state of South Dakota and Iowa the difference is 32.25%. It is also interesting the finding of significant differences (within all statuses) between the first and second state (about 4–7%), as well as between the first and the third state (about 11–15%). Such large deviations of the tax burden among states in other ranks are not reported.

General overview of the tax burden presents Fig. 1.

The state which the most burdens the farms (regardless of status) is clearly Iowa. It is therefore the least attractive state for natural person's business from the perspective of overall taxation. High taxation is determined by low amounts of deductions. Most are burdened single taxpayers

XIV: *Ranking of countries according to the amount of income tax (status single taxpayer and husband without children)*

Ranking	State	Income tax– Single (USD)	Deviation from the first in the sequence (%)	Ranking	State	Income tax– husband without children (USD)	Deviation from the first in the sequence (%)
1.	S. Dakota	18,616	0	**1.**	S. Dakota	18,616	0
2.	N. Dakota	19,804	6.38	**2.**	N. Dakota	19,410	4.27
3.	Ohio	20,755	11.55	**3.**	Ohio	20,755	11.49
4.	Indiana	20,904	12.29	**4.**	Indiana	20,904	12.29
5.	Michigan	21,426	15.09	**5.**	Nebraska	20,945	12.51
6.	Illinois	21,931	17.81	**6.**	Michigan	21,426	15.09
7.	Missouri	22,006	18.21	**7.**	Kansas	21,544	15.73
8.	Nebraska	22,112	18.78	**8.**	Wisconsin	21,550	15.76
9.	Wisconsin	22,138	18.92	**9.**	Missouri	21,649	16.29
10.	Kansas	22,210	19.31	**10.**	Minnesota	21,736	16.76
11.	Minnesota	22,341	20.01	**11.**	Illinois	21,931	17.81
12.	Iowa	22,819	22.58	**12.**	Iowa	22,600	21.40

Note: first in the order = 100%.
Source: own calculations

(both without children and also the head of household). Their incomes go through all nine tax brackets. Identification of other states with high levels of overall taxation is not so clear, as there the amounts of total tax obligations overlap. It can be stated that the single farmers without children are highly burdened also in Minnesota (11th) and Kansas (10th place). Illinois ranked 11th in the taxation of income of a married farmer without children and with children. Tenth place in the taxation of husband without children holds Minnesota and as concerns the taxation of married couples with children it is Missouri. Other states that impose the greatest burden on income of farmers with the status of heads of household are Nebraska (11th place) and Wisconsin (10th place).

Comparison of the results of the analysis of burden of sales taxes on model farms shows Fig. 2.

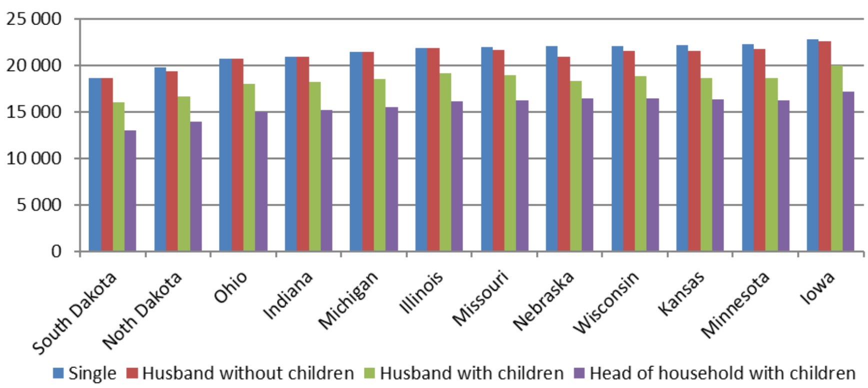
An analysis of sales tax shows interesting findings in the form of deviations of calculated tax of model farm in individual states. The burden of sales tax in Minnesota is more than 71% higher than in South Dakota and Indiana nearly 75% higher than in South Dakota.

On the base of above mentioned findings, it is possible to state that the absolute primacy in terms of both analyzed taxes holds the state of South Dakota. It burdens the overall income of taxpayers

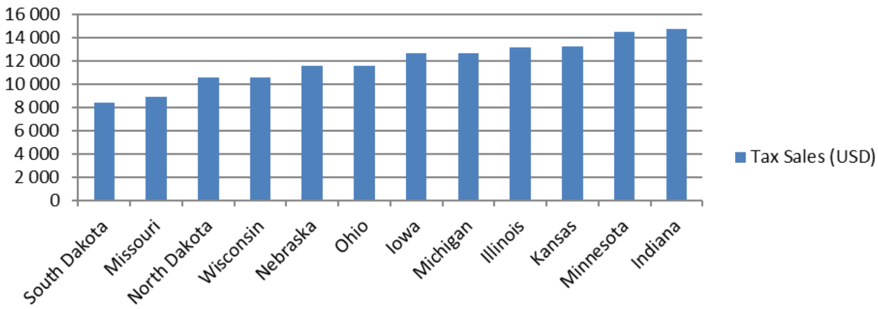
XV: *Ranking of countries according to the amount of income tax (status husband with children and head of household with children)*

Ranking	State	Income tax – Husband with children (USD)	Deviation from the first in the sequence (%)	Ranking	State	Income tax – Head of household with children (USD)	Deviation from the first in the sequence (%)
1.	S. Dakota	16,016	0	**1.**	S. Dakota	13,012	0
2.	N. Dakota	16,695	4.24	**2.**	N. Dakota	13,986	7.49
3.	Ohio	18,019	12.51	**3.**	Ohio	15,015	15.39
4.	Indiana	18,236	13.86	**4.**	Indiana	15,232	17.06
5.	Nebraska	18,329	14.44	**5.**	Michigan	15,500	19.12
6.	Michigan	18,504	15.53	**6.**	Illinois	16,127	23.94
7.	Minnesota	18,600	16.13	**7.**	Minnesota	16,201	24.51
8.	Kansas	18,633	16.34	**8.**	Missouri	16,258	24.95
9.	Wisconsin	18,859	17.75	**9.**	Kansas	16,316	25.39
10.	Missouri	18,905	18.04	**10.**	Wisconsin	16,443	26.37
11.	Illinois	19,131	19.45	**11.**	Nebraska	16,491	26.74
12.	Iowa	19,994	24.84	**12.**	Iowa	17,208	32.25

Note: first in the order = 100%.
Source: own calculations



1: *Total income tax lability including SET (in USD)*
Source: own processing



2: *Burden of sales tax on model farm – as per rank (in USD)*
Source: own processing

at least. The same concerns sales tax. South Dakota was therefore assessed as the most attractive of all monitored states. Also the State of North Dakota can be recommend, which in the context of income tax ranked second (in all statuses) and ranked third as regards sales tax burden. From the deviations calculated in Tab. XIII, Tab. XIV and Tab. XV, it is clear that the difference between the tax burden on model farms in the state with the highest and lowest tax burden in the context of both taxes is very significant. The calculated deviations exceeded 10% limit of significance determined by authors in all taxes in all evaluated statuses at least twice (the smallest deviation amounted to 21.40%, the highest was 74.99%.). Based on these facts we can confirm the assumption defined at the beginning of this contribution.

CONCLUSION

The results of the research show that the optimal state for natural persons business in the so-called Corn Belt is South Dakota. This state does not burden its taxpayers with income taxes and farmers here pay only taxes on federal level. At the same time South Dakota is the state with the lowest rate of sales tax. As a tax-friendly state can be considered also North Dakota, which in comparison of the income tax burden was placed second in the order and when comparing sales taxes burden it occupies along with Wisconsin 3rd and 4th place.

The paper confirms the assumption that the burden of farmers in different states show significant differences as deviations of tax burden on model farms in the state with the highest and lowest tax burden exceeded in both taxes and all statuses the limit of significance twice.

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