THE DISTRIBUTIONAL IMPACTS OF MEAL VOUCHERS IN THE CZECH REPUBLIC

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Abstract
This article aims to analyse the distributional impacts of the meal voucher system in the Czech Republic, especially concerning income inequality. It analyses the redistributive effects of meal allowances on various income deciles providing rough estimates of the impact of meal allowance tax exemption on the government budget and simulating several scenarios for the replacement of the current meal allowance scheme with flat meal allowances. We estimate that meal allowance tax relief represents a direct burden of around 11.3 billion Czech korunas for the state budget, although this approximation does not take indirect effects into account and could thus be an overestimate. We provide evidence which suggests that the current form of meal allowances widens the income gap between beneficiaries and non-beneficiaries, within as well as across the income deciles. Affluent households receive meal allowances more frequently, and, moreover, the allowances they receive are both nominally and proportionately higher. According to our simulation using a constant budget of the size of our rough estimate replacing the current meal allowance scheme with a flat meal allowance system would promote income equality. Such a change would benefit the lower deciles, due to a higher share of individuals in these deciles being entitled to meal allowances, while the upper decile households would see a decline in their meal allowances.

Keywords: meal allowances, income inequality, redistributive effects, tax reliefs
JEL Classification: D31, H23, H24, J32

1. Introduction

Meal vouchers are a widely used employees´ benefits in the Czech Republic. Because of tax relief, they appear advantageous both for employers and for their employees. From time to time the issue of tax exemption has been discussed by Czech politicians and the media. Meal vouchers affect employees' behaviour, as well as the behaviour of the firms employing

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them. On the one hand, they reduce labour costs and possibly improve employees' eating habits, thus potentially increasing productivity. Moreover, they give small and medium enterprises, which cannot afford canteens, the ability to take care of catering for their staff as larger firms do. On the other hand, they represent a significant administrative burden with many restrictions. Employers participating in the scheme must allocate to a member of staff the task of recording the number of days worked by each employee, and ordering the vouchers accordingly from specialised voucher companies. Likewise, the restaurants that accept the meal vouchers have a certain amount of their income tied up in the vouchers, and have to deal with a lag in their cash. Furthermore, the restaurants' profit is reduced as a result of the commission charged by the voucher companies. Whether their costs associated with meal vouchers outweigh the revenue from customers attracted by the opportunity to spend their vouchers is a matter for further study. Nor are employees strictly better off; they are restricted by the limited ways of spending the vouchers, and by their validity (especially at the end of the calendar year), and, if their lunch break is short, they may not have sufficient time to be able to eat at a restaurant. Last but not least, an important characteristics and a disadvantage of the meal voucher scheme is its negative impact on the state budget.

The objective of this article is to examine the impact of meal vouchers on income redistribution. Do meal vouchers contribute to income equality? Which income groups benefit from the vouchers? Are meal vouchers equally distributed among different social groups? In addition to these questions, we also provide a rough estimate of the impact of meal vouchers on the government's budget. Furthermore, we carry out simulations to find out the potential impact of abolishing these tax exemptions or replacing them with flat tax allowances.

The paper is structured in the following way. The subsequent section reviews the relevant literature. Section 2 outlines the methodology and the data used. Sections 3 and Section 4 discuss the descriptive and simulation results, respectively. Section 5 concludes.

2. Literature Review

The modern meal voucher scheme originated in the United Kingdom, where it was first introduced in the early 1950s. Meal vouchers are used as a remuneration technique in most European countries (Wanjek, 2005). Employers who participate in such schemes usually provide their employees with vouchers of whose face value around 50 to 100 *per cent* has been paid by the employer. National laws determine the restrictions on the vouchers' redemption. For example, in some countries vouchers may only be used for sit-down meals, or for meals of a specific caloric content (Edenred, 2012).

These voucher systems are usually run by private voucher companies, and governmental approaches to regulating the meal voucher market vary. In Italy, auctions are used (Roson, 2004). In Hungary, the governmental Erzsébet programme was introduced in 2012 in order to transfer gains from voucher providers to the governmental budget (Ministry of Public Administration and Justice, 2012). In most countries meal vouchers are exempt from health and social security contributions; frequently they are also exempt from income tax and VAT. Sweden, however, has a unique meal voucher system without any tax incentive; a strong tradition of social benefits for employees means that subsidized meals are an important bargaining tool between employers and unions.

Meal vouchers are usually used as an employee benefit in Europe. However, in some countries, voucher schemes constitute an integral part of the governmental social

programme. Bradford and Shaviro (1999) describe voucher consumer-side and supplier-side issues using such voucher-like government programmes from the United States.

Hammeresh and Johannes (1983) also discuss the cash-equivalency of vouchers. Their analysis relates to the "moneyness" and "incomeness" of Food Stamps (food vouchers used in the USA). They conclude that despite the fact that Food Stamp money is excluded from the money stock, the Food Stamps serve not only as a medium of exchange but also as high-powered or base money. Furthermore, they argue that Food Stamps are the "missing money" that economists had been searching for since Goldfeld (1976), because they act like M1.

Zilijak and Gundersen (2003) also discuss the same Food Stamps programme. They try to estimate the effect of food stamps on income and food consumption stabilization. Their results suggest that the Food Stamps reduced income volatility by about 3 *per cent* and consumption volatility by about 4 *per cent*. The cash-equivalency of vouchers is further analysed by Jackson (1999).

In the Czech Republic, meal voucher schemes are practically academically uncharted territory. The macroeconomic efficiency of the meal voucher system was partially examined by Buus and Žďárek in 2007, and revised by Buus in 2011 in terms of the completion of tax amendments. The aim of these studies was to examine the fiscal impacts of meal vouchers and employees' eating habits more generally. They also estimate the impact on fiscal deficit of replacing the meal voucher scheme with an equivalent tax relief. All the figures cited are from the later version of the study (2011).

According to their calculations, 1.3 million employees are provided with meal vouchers, 1.75 million employees eat in canteens, and 1.204 million take meals on their own. The meal voucher companies' association APROPOS estimated size of the meal voucher market in 2012 to be 16,000 million Czech korunas (CZK), and the canteen market to be worth CZK 21,100 million. According to their middle scenario, the replacement of tax-exempt meal allowances by a fixed monthly tax relief of CZK 150, 250, 400, 500 or by reduced VAT at 17% or 20% would increase the fiscal deficit.

In the Czech Republic, meal vouchers and canteen subsidies are usually granted on the top of the normal salary; however, this is not explicitly stated in the law, as it is in other countries. Vouchers are one of the most common employees´ benefits in the Czech Republic: according to PWC's study "PayWell", 71% of employers use meal vouchers as an employee benefit (BENEFIT PLUS, 2014). The 3 main companies providing these meal vouchers: Edenred, Sodexo Pass Česká republika and Le Chéque Dejeuner together cover almost 100% of the market. 31.2% of employees receive meal vouchers, while 44.2% use canteens (Buus, 2011). Neither vouchers nor canteen meals are subject to Czech health and social security contributions or income tax (Czech Republic, 1992b) (Czech Republic, 1992c). Employers are only required to provide their employees with meal allowances when they are on business trips. When the employees work regular shifts, their employers are required to enable them to take meals during their regulated breaks, but whether they provide meal allowances to the employees is up to them (Czech Republic, 2006). Meal subsidies are regulated by the Labour Code and the Income Tax Act. Since September 2013 it has been possible to pay with electronic meal vouchers (BENEFIT PLUS, 2014).

The tax advantages of meal allowances for employers are outlined in the Income Tax Act. Expenditures related to running company catering facilities and meal allowances

for meals provided by other entities are both tax deductible expenses up to 55% of the price of one meal *per* shift, or the nominal value of the meal voucher. The remaining 45% of the price is tax non-deductible. In contrast to the private sector, there is an upper limit for meal allowances granted to civil servants, which is currently CZK 80 (according to the allowance for a business trip lasting 5–12 hours stated in Income Tax Act). If the potential tax deductible expense exceeds 70% of the upper limit for meal allowances, it is considered a tax deductible expense only up to this limit (Czech Republic, 1992a). Consequently, the maximum tax deductible expense in 2014 is 70% of CZK 80, *i.e.* CZK 56 *per* meal, and the employer's maximum contribution towards the employee's meals, assuming tax deductible expense of 55%, is CZK 101.8 (Czech Republic, 2013).

By law, meal vouchers must have safety features to protect them against illegal counterfeiting. The vouchers are valid for one calendar year and voucher providers issue a new type of ticket every year. By nature, meal vouchers are cash equivalents (Rejzlová, 2013); consequently they are not subject to value added tax.

3. Methodology

We examine the impact of meal allowances on households' disposable income across various income groups. Importantly, we analyse the size of "meal allowances" instead of "meal voucher income" because meal vouchers and canteen meals are not distinguished in the dataset used. According to Buus (2011) is it possible to calculate that 58.6% of beneficiaries use canteens, while 41.4% receive vouchers, but it is impossible to arrive at a more detailed breakdown of meal allowance usage among the various income groups due to the lack of available information.

We use data from the Statistics on Income and Living Conditions (SILC) sample survey ("Životní podmínky" in Czech) carried out by the Czech Statistical Office, which is the national version of the EU-SILC (European Union - Statistics on Income and Living Conditions). In this paper we use the SILC data collected in 2011, which report incomes for the year 2010 and which were published in 2012. This was the latest data available when we began our research and thus was the most appropriate data to use; although it is now no longer the latest data, we still find it appropriate for our current research questions.[1]

The SILC is a standard dataset used for analyses with similar distributional objectives, and the upsides and downsides of using it are described, for example in Dušek, Kalíšková and Münich (2013), who also provide more details on distributional analysis and the suitability of the SILC data for such analyses. The sample consists of 20,629 observations of individuals assigned to 8,866 households. There are 4,134 employee households in the sample. Observations are recorded for 251 variables, 83 variables describing households and 169 variables describing individuals. For the purpose of our analysis,

1 We assume that the structure of employment and incomes, including those from meal allowances, have not significantly changed since the data were collected such as to substantially affect our analysis. This assumption is supported by a few observations. First, there has not been any significant change in meal allowance policy during the past few years. Second, according to information on the Czech Statistical Office's web page for SILC surveys, the average growth of household income between 2011 and 2014 was relatively low at 2% and the share of natural income, of which meal allowances are part, remained stable. All in all, we find this assumption plausible and the dataset suitable for our analysis.

we use the households' net income and income in kind (especially meal allowances), the municipality size, the type of municipality, the social group of the household's head, and their occupation.

Meal allowances denote the employer's net contribution to the employees' meals. The computation is based on the number of meal allowances, the value of single meal allowances and the employee's contribution. Whether the employee obtains meal allowances in the form of canteen meals or meal vouchers cannot be identified from the available data (Czech Statistical Office, 2010), hence it is not possible to focus exclusively on meal vouchers in our empirical analysis. The analysis below therefore uses information on the employer's net contribution to the employees' meals *in any form*.

Household income data is itself meaningless without information about the number of members in the household. A two-person household with the same disposable income as a four-person household has different living costs and enjoys a different standard of living. For better comparability of outcomes we have therefore recalculated the income variables in consumer units (CU)[2].

We examine the impact of meal allowances on households' net income. We do not estimate the impact of meal allowances on individuals' net income because the value of individual's allowances is unknown in the data and because the large share of individuals with net income equal to zero would distort the outcomes. Furthermore, individuals within households usually share incomes as well as expenses. We present results and construct income deciles for the whole population as well as for employees separately, because meal vouchers and canteens are mainly used by employees and any changes to the meal voucher system (or meal allowances in general) are most relevant to employees.

In order to gain a deeper insight into distributional impacts, we look at the number of members in each household who receive meal allowances and compare it with the total number of members in that household. For modelling purposes we use the total number of people living in the household (although all recalculations are done using CUs), since we believe that the share of household members receiving meal allowances provides a better insight into the source of that household's meal allowance income. To facilitate the interpretation of our results, we use monthly, rather than annual data on income and meal allowances. We express income in the form of meal allowances as a share of net income ("meal allowance income").

We use the probit model to establish the profile of a typical meal allowance recipient. Our approach is inspired by the relevant literature discussed above as well as by standard economic theory. The dependent variable indicates whether the individual receives meal allowances. We use the individual's characteristics, which may be linked to whether a person receives meal allowances or not, as independent variables:

$$meal_{all} = \beta_0 + \beta_1 group + \beta_2 decil_{ni} + \beta_3 occup + \beta_4 worked_h + \beta_5 worked_h^2 + \beta_6 educ + \beta_7 subor + \varepsilon$$

where *group* denotes social group (employee, pensioner, self-employed...), $decil_{ni}$ denotes income decile, *occup* denotes occupation, $worked_h$ denotes number of hours worked *per*

2 We use OECD's definition of a consumer unit. Each household is described by a sum of consumer units depending on household composition and age of children. The head of the household weighs 1.0 consumer unit, children aged 0–13 years weigh 0.5 units and other members of the household weight 0.7 consumers units.

week, *educ* denotes education level, *subor* indicates whether the individual has subordinates and ε is an error term. All the independent variables are categorical variables, except for $worked_h$, which is a discrete variable. We select these variables because we are convinced that these are the most influencing factors. The effect of the *group* variable is obvious inasmuch as employees are the main group of recipients (it is supported by a descriptive statistics provided below). The variable $decil_{ni}$ is crucial as we are mainly interested in participation across income deciles, we chose the *occup* variable because we expect meal allowance scheme participation to be more common in certain professions, especially among civil servants (clerks, teachers, members of the armed forces). We decided to include the number of hours worked *per* week, as we believe that this is a potentially interesting feature of the typical recipient. In addition to $worked_h$ we also include the squared term in order to capture the fact that meal allowances are usually provided to employees working full-time, *i.e*. about 40 hours *per* week (variable $worked_h$ takes values from 0 to 96). The inclusion of the squared term of hours worked enables the regression to capture the expected non-linear distribution of meal vouchers according to how much a person works. We are interested in whether education affects the probability of receiving meal allowances. We suppose that *educ* should have some effect, since education influences choice of profession and thus (implicitly or explicitly) meal allowance participation. For the purposes of the probit model we aggregate education into 3 groups: primary or secondary education without the school-leaving exam, secondary education with the school-leaving exam (or equivalent), and university education. The last chosen explanatory variable is a dummy indicating whether the individual has subordinates. We expect that managerial positions (those with subordinates) have a higher participation rate in meal allowance schemes. A regression analysis does not aim to clarify any causal relationships among variables and is used to describe the characteristics of beneficiaries.

4. Descriptive Observations

We observe that 48.05% of Czech households, in total comprising about 5 million people, receive meal allowances in some form. Participation in meal allowance schemes is slightly lower in Prague than in other municipalities. Nevertheless, larger municipalities, Prague included, account for higher meal allowances than smaller towns. Table 1a and Table 1b present the outcomes of our geographical analysis. An average household receives CZK 175 in meal allowances *per* consumer unit *per* month and meal allowances constitute 1.14% of the average household's income (see Table 2).

The results for the entire population show that the participation rate differs significantly between the income deciles. 60–70% of households in the three highest deciles receive meal allowances, while the rate among households in the three lowest deciles does not exceed 40%. Proportionately, the richer households also benefit the most (from the seventh to ninth decile, income in the form of meal allowances accounts for 1.4% of household net income, compared to 1% for households in the lowest deciles). It is interesting to note that on average the richer households are not only benefiting more absolutely, in CZK, but also relatively, as a share of their income. In other words, in population on average the benefit a household gains from meal vouchers increases with the household income, and at a higher rate than the income itself. This outcome stands against the basic principle of meal allowances. It is understandable that more qualified jobs are associated with higher pay classifications, *i.e*. higher income deciles, and that employee benefits correspond to this.

Meal allowances, however, are of a different nature than other types of employee benefits. They should, *inter alia*, improve employees' eating habits and consequently contribute to better employee health. Many studies have revealed that members of lower socioeconomic groups are more likely to suffer from diseases associated with poor nutrition. Robertson, Lobstein and Knai allege in their report (2007) that 26% of obesity in men and over 44% of obesity in women is attributable to socioeconomic differences. Thus to achieve their original goals, meal allowances ought to be of greatest benefit at the lower end of the income ladder, and not – as we have found – at the higher end.

Table 1a | Population: Meal Allowances by Municipality Size

Size (inhabitant)	Mean			
	Net income (CZK)	Meal allowances (CZK)	Meal allowance income (%)	Participation (%)
up to 199	13,528	146	1.10	48.7
200 – 499	14,055	138	0.95	41.5
500 – 999	13,863	152	1.05	46.7
1,000 – 1,999	13,814	171	1.24	51.9
2,000 – 4,999	14,641	161	1.08	51.4
5,000 – 9,999	14,735	167	1.09	50.5
10,000 – 49,000	14,195	182	1.23	48.7
50,000 – 99,999	14,921	165	1.10	44.8
100,000 +	18,112	211	1.16	47.0
Total	15,103	175	1.14	48.0

Source: Authors on the basis of the SILC data

Table 1b | Population: Meal Allowances by Municipality Type

Type	Mean			
	Net income (CZK)	Meal allowances (CZK)	Meal allowance income (%)	Participation (%)
Prague	19,842	229	1.19	46.6
Regional municipality	16,000	192	1.19	49.7
Urban municipality	14,251	170	1.15	47.6
Rural municipality	14,057	156	1.09	48.4
Total	15,103	175	1.14	48.0

Source: Authors on the basis of the SILC data

The decline in the tenth decile is probably caused by a significant increase in monthly net income *per* CU between the ninth and tenth deciles (Table 2). Even if meal allowances were to constitute the same share of household income across all deciles, the upper-decile workers would still enjoy more meal allowances in absolute terms. Since meal allowance income (as a share of total income) in fact rises with increasing household income, it is evident that the meal allowance system in its current form may contribute to promoting income inequality.

The very low level of meal allowances *per* CU within the first decile is mainly driven by low participation: whereas in higher deciles more than one third of household members receive vouchers, only just over 7% receive allowances in the lowest decile. This probably stems from the higher share of economically active members within the upper-decile households, together with the larger average household size at the lower end of the income ladder (Table 2). Additionally, we should be particularly careful in our interpretation of the results for the first, as well as the tenth decile because of the potentially substantial underreporting of incomes at both extremes of the income distribution (more research is needed to reach a better understanding of the underreporting of incomes in the SILC data).

Table 2 | Population: Meal Allowances by Income Deciles of Population

Decile	Mean						
	Number of members	Share of granted members (%)	Working (%)	Net income (CZK)	Meal allowances (CZK)	Meal allowance income (%)	Partici-pation (%)
1	3.8	7.3	21.3	6,185	54	0.8	26.2
2	3.4	11.8	30.4	9,168	92	1.0	34.5
3	3.0	13.5	27.8	10,654	102	1.0	37.8
4	3.0	13.0	28.6	11,633	101	0.9	35.9
5	3.0	19.0	36.	12,740	151	1.2	45.3
6	3.2	20.8	43.7	13,924	169	1.2	48.3
7	3.1	26.8	51.2	15,456	212	1.4	59.0
8	3.0	31.4	61.4	17,585	246	1.4	62.7
9	2.9	37.0	69.1	20,793	306	1.5	67.8
10	2.8	36.7	72.8	32,925	322	1.1	63.0
Total	3.1	21.7	44.2	15,103	175	1.1	48.0

Source: Authors on the basis of the SILC data

The Table 3 shows results for employees only. Nearly 70% of them receive meal allowances and these, on average, account for 1.73% of their net income, or almost CZK 270 *per* month. There are disparities in the participation rate between the upper and lower deciles, but participation is quite high even in the first income decile (almost 50%).

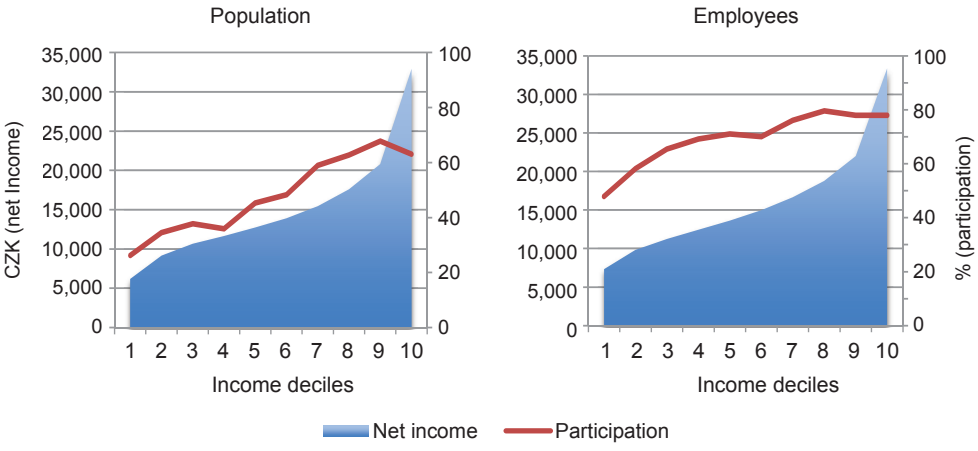
The share of net income constituted by meal allowances differs across deciles, with the highest share in the fourth decile (over 1.9%) and the lowest in the tenth decile (1.36%) (Table 3). On average, one third of an employee's household members receive meal allowances: ten percentage points higher share than among the population as a whole (Table 3).

Table 3 | Employees: Meal Allowances by Income Deciles of Employees

Decile	Mean						
	Number of members	Share of granted members (%)	Working (%)	Net income (CZK)	Meal allowances (CZK)	Meal allowance income (%)	Participation (%)
1	4.2	14.3	34.0	7,342	112	1.5	47.9
2	3.8	20.4	42.3	9,820	160	1.6	58.2
3	3.8	24.2	45.6	11,237	198	1.8	65.5
4	3.6	28.7	49.7	12,447	238	1.9	69.2
5	3.5	30.8	57.3	13,642	251	1.8	71.0
6	3.4	33.4	58.7	14,993	266	1.8	70.1
7	3.1	38.0	67.4	16,661	310	1.9	76.1
8	2.9	44.3	72.3	18,779	351	1.9	79.6
9	2.8	46.1	74.9	22,020	288	1.8	78.0
10	2.8	47.4	76.2	33,395	419	1.4	78.0
Total	3.4	32.8	57.8	16,030	269	1.7	69.4

Source: Authors on the basis of the SILC data

Figure 1 | Net Income and Meal Allowances by Income Deciles



Source: Authors on the basis of the SILC data

Figure 1 depicts the relationship between net income and participation in meal allowance schemes, with respect to income deciles. The left chart stems from the population data reported in Table 2, while the right chart focuses on employees' data as reported in Table 3.

Among meal allowance recipients, the share of income constituted by meal allowances and the nominal value of those meal allowances are both necessarily higher than among the population in general. The average value of meal allowance income is 2.37%, *i.e.* over CZK 365 *per* month. In the sample of employees only we observe that relative meal allowance income decreases as overall income increases, in contrast to our previous observations. Households in the first income decile receive 3.07% of their income in the form of meal allowances, whereas the richest households receive only 1.74%. This should be expected, inasmuch as the cost of a standard meal does not significantly differ for low-income and high-income workers. Within recipient households, the number of household members who receive meal allowances is fairly balanced across income deciles (again, in contrast to our observations for the whole population). The trend towards an increasing proportion of economically active members in households in higher income deciles persists among meal allowance beneficiaries (as observed for the entire population and employee households, too).

The data for the entire population suggest that the average meal allowance recipient has their household's income increased by CZK 3,180 *per* month as a result of participating. Across all income deciles the net income of non-beneficiaries is lower than the net income of beneficiaries, except in the tenth decile: the richest recipients have a lower net income than the richest non-recipients, by nearly CZK 4,000 *per* month. This is probably caused by a high share of self-employed persons in this income decile (with low participation in meal allowance schemes) and a low share of unskilled employees (who would participate in meal allowance schemes more widely). We observe a similar effect among employees only. The net income of the average employed beneficiary is CZK 2,524 *per* month higher than that of non-participating employees. Using income deciles obtained for employees only, all employees' households enjoy higher income when receiving meal allowances (in contrast to the pattern seen across the entire population).

Our probit model estimates suggest that the average meal allowance recipient is an employee with subordinates (*i.e.* a managerial employee) who works full-time, 40 hours *per* week. The average recipient has a university education and is a member of the armed forces, a teacher, a legislator or a clerical worker. This result may be affected by the high incidence of subsidized canteens at state-owned institutions. The average recipient belongs to one of the upper five income deciles. All of these values are statistically significant at the 5% significance level. The marginal effects are given in Table 4, Table 5 and Table 6.[3] Further results regarding the effect of occupation can be sent on request. The results in Table 4 are intuitive: higher income deciles imply a higher probability of receiving benefits.[4]

3 The likelihood ratio chi-square of 10,525.23 indicates that our whole model is statistically significant. We used McFadden's R2 to measure the goodness of fit. Given that PseudoR2 equals 0.490 and adjusted PseudoR2 equals 0.484, we conclude that our model sufficiently captures reality.

4 If we focus on the data by occupations (not shown in table because of space), we see that there is an intuitive mismatch between the characteristics of a typical meal allowance beneficiary and the representatives of the lowest three income deciles. Therefore, it is unsurprising that there is a significantly lower participation rate among poorer households (representatives of the lowest three deciles often work in sectors offering low meal allowance benefits).

Table 4 | Average Beneficiary: Marginal Effect of Income Decile

Decile	Estimates	
2	0.0121	(0.99)
3	0.0409***	(3.32)
4	0.0205	(1.66)
5	0.0481***	(4.00)
6	0.0396***	(3.37)
7	0.0397***	(3.44)
8	0.0500***	(4.35)
9	0.0591***	(5.11)
10	0.0512***	(4.27)

Notes: 1st decile is used as a base group; t statistics are in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Authors on the basis of the SILC data

Table 5 | Average Beneficiary: Marginal Effect of Social Group

Group	Estimates	
Lower employee	0.248***	(9.39)
Self-employed	−0.0387*	(−2.18)
Higher employee	0.186***	(8.37)
Pensioner	0.0236	(1.81)
Unemployed	0.111***	(5.99)
Others	−0.00475	(−0.34)

Notes: N/A is used as a base group; t statistics are in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Authors on the basis of the SILC data

Here we provide rough estimates of the direct effects of meal allowances on the state budget. Meal allowances in total amount to over CZK 17.3 billion *per* year. If they were not tax exempt, employees who receive meal allowances would pay (according to 2010 rates) 11% of the allowances' value in health and social security contributions, and their employers would pay 34% of the meal allowances' value for the same. Moreover, meal allowances would be part of each recipient employee's super-gross wage and thus subject to income tax. In 2010 the super-gross wage was approximately 1.34 times the gross wage, and income tax was 15%. Consequently, in that year, employees would have paid over CZK 1.9 billion and employers almost CZK 5.9 billion in health and social security contributions. The income tax revenue from the meal allowances would have been over CZK 3.48 billion. In total, this means that the tax exemption of meal allowances represented

a burden to the government budget of almost CZK 11.3 billion in 2010 alone. This figure is nearly twofold that found by Jareš (2010) of CZK 5.886 billion, mainly because we have taken into account health and social security contributions, whereas Jareš's study considered only income tax exemption[5].

Table 6 | Average Beneficiary: Marginal Effect of Hours Worked, Education and Subordinates

Hours worked	**Estimates**	
Hours worked	0.00406***	(7.45)
Hours worked2	−0.0000588***	(−6.78)
Education	**Estimates**	
Secondary education with school-leaving exam and related courses	0.0504***	(4.53)
University education	0.0796***	(6.41)
Subordinates	**Estimates**	
yes	0.138***	(3.53)
no	0.118**	(3.24)

Notes: education without high school-leaving exam and N/A, respectively, are used as base groups; t statistics are in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Authors on the basis of the SILC data

Additionally, employers have the option of deducting 55% of the value of meal allowance from their corporate income tax base. This reduction of tax base represents another loss to the state budget. If we assume the maximum scenario, *i.e*. that all employers providing meal allowances to their employees reduce their tax base, we arrive at the upper bound estimate of the loss to the state budget through this practice, at CZK 1.8 billion (basic corporate income tax was 19% in 2010). However, due to a lack of data as to how employers really use this reduction in the tax base, we do not use this figure further in our calculations.

In addition to excluding this corporate tax reduction from our overall budget estimate, there are a number of other effects that we are not taking into account. Most of these effects would likely decrease the budget burden estimate presented here. For example Buus (2011) points out that a large share of employees with vouchers tend to spend them (and any cash above the value of the vouchers) in restaurants. These restaurants hire workers, who spend their wages and pay taxes, and their owners pay income tax as well as social contributions. The estimation of these indirect effects, their size and additionality is beyond the scope of this work and is suitable for further research for which more detailed data that are currently not available would be needed. Nevertheless, it is worth noting that these effects would likely decrease the budget burden estimate presented here. All in all,

5 Furthermore, Jareš's result is based on the estimate that 3 million employees receive meal allowances of CZK 60 *per* day, for 218 days, therefore it differs from our estimate of meal allowance income tax exemption.

we estimate that meal allowance tax relief represents a direct burden of around 11.3 billion Czech korunas for the state budget, although this is a rough estimate that does not take indirect effects and corporate tax deductions into account – factors that could on balance decrease this estimate.

5. Simulation Results

This section presents simulation results in response to the question: what would the distributional impact be if the tax exemptions were abolished or replaced with flat tax allowances? Answering such a hypothetical question has its limitations, of course, the first of which lies in the fact that we will use a constant budget of the size of the rough estimate made in the Section 3. We start by simulating the abolition of meal voucher-related tax exemptions and continue by simulating the replacement of the current meal allowance schemes with a new system of flat meal allowances.

Focussing on direct effects only and ignoring the indirect effects, we have shown above that the government could benefit financially if the tax exemptions on meal allowances were removed. This section builds upon this rough estimate and looks at the impact of abolishing these tax exemptions on household incomes. If meal allowances were abolished without any compensation, the average household would see its income drop by CZK 421 *per* month. *Per* consumer unit, this would translate into a reduction of CZK 175 *per* month *per* CU. The average *employee* household would see its income drop by CZK 636 *per* month (CZK 269 *per* month *per* CU).

Table 7 | Different Levels of Meal Allowances

Level of meal allowances	Population		Employees	
	Household	CU	Household	CU
Net income without meal allowances (CZK)	34,812	15,103	38,827	16,030
Meal allowance income (%)	1.14		1.73	
Net income with current meal allowances (CZK)	35,233	15,278	39,463	16,299
Meal allowance income (%)	0.40		0.60	
Net income with taxed meal allowances (CZK)	34,959	15,164	39,049	16,124
Meal allowance income (%)	0.18		0.27	
Net income with 45% taxed meal allowances (CZK)	34,878	15,130	38,927	16,072

Source: Authors on the basis of the SILC data

If the employer's personnel costs remained unchanged, but salaries were reduced accordingly, employers could either 1) continue to grant the same meal allowances as before (but taxes would be due on their value) or 2) grant fewer meal allowances, with a value

at least 45% of those granted previously. Under the first option, the average household would see its income lowered by CZK 274 *per* month (CZK 114 *per* month *per* CU). The average employee's household income would be reduced by CZK 414 *per* month (CZK 114 *per* month *per* CU). The government budget would increase by the aforementioned CZK 11.3 billion. Under the second option, the remaining 45% of meal allowances would constitute 0.18% of household income (0.27% for employees' households). The income of the average household would drop by CZK 355 *per* month (CZK 148 *per* month *per* CU). The average employee's household would see its income reduced by CZK 536 *per* month (CZK 227 *per* month *per* CU) – see Table 7. This would increase the government budget by CZK 6.2 billion, although this estimate, similarly to the previous impacts on the government budget, does take into account changes in tax incidence and other related mechanisms and we leave these more rigorous estimates to further research.

According to our findings, the current meal allowance system is regressive and does not contribute to income equality. In order to propose an alternative, more progressive system, we simulated the replacement of the current meal allowances with a new system of flat meal allowances according to a few possible scenarios, of which we present two here.

In the first case we suppose that a flat meal allowance of CZK 250 *per* month (in the form of an income tax reduction) would be granted to all economically active individuals (this scheme was proposed in 2011). These meal allowances would constitute 0.97% of the average household's net income. Generally, over 24% of households would be better off and almost 21% of households would be worse off than they were in 2010. The average value of meal allowances *per* beneficiary would decrease by almost CZK 28. The fact that over 24% of households would be better off (although eight out of the ten deciles would have lower income in absolute terms) stems from the higher number of beneficiaries across all deciles: meal allowances are nominally lower, but more people receive them. What is more important is that the lower-decile households would be significantly better off under such a scheme, and meal allowances would be nominally higher in the lowest two deciles. The same trend would apply within employees' households. A large percentage of rich households would be worse off with flat meal allowances, hence almost 32% of employee households overall would be worse off, while nearly 27% of employee households would be better off. Meal allowances would constitute 1.25% of the average employee household's net income. The results suggest that Scenario 1 would offer a more socially fair system but with a generally lower level of meal allowances *per* household (especially in the upper deciles). It would represent a burden to the state of 13.8 billion Czech korunas (CZK 2.5 billion greater than the current meal allowance scheme).

The Scenario 2 introduces another solution using the current meal allowance budget, *i.e*. CZK 11.3 billion, whereby these resources would be equally distributed among all economically active individuals (CZK 204 *per* beneficiary *per* month). This lowers the average monthly meal allowance value *per* beneficiary by almost CZK 49 compared with the situation in 2010. Almost 24% of households would be better off, and about 21% would be worse off. Again, poorer households would benefit more. The impacts on employees' households are similar to those seen in the Scenario 1. Scenario 2 offers desirable distributional impact in favour of lower-decile households and thus smoothens out the income inequality seen in the current scheme.

Overall, we view these two scenarios as preferable to two other scenarios, which offer a less adequate solution from the perspectives of equality and state finance and which we therefore do not describe in detail.[6] The Scenario 1 is preferable in terms of its impact on the population as, at CZK 250, it offers higher-value meal allowances. However, it is CZK 2.5 billion more expensive to run than Scenario 2. Of course, it would be up to politicians and policy makers to decide which is preferable, and they would ideally have a more detailed analysis available, which would use more detailed data and more complex estimates of the budgetary impacts, including the indirect impacts that are not reflected in our present research.

6. Conclusion

In this article we have analysed the distributional impacts of meal voucher schemes. Meal allowances are partially tax deductible, thus all taxpayers contribute to them. The average meal allowance received *per* household member was worth CZK 175 *per* month and according to our analysis (which does not take into account indirect effects and could thus be an overestimate), meal allowances overall represented a direct burden on the 2010 Czech budget of around CZK 11.3 billion. In theory, thanks to their embedded re-distributional nature, meal allowances should, among other beneficial effects, contribute to income equality. However, our findings suggest that the current system in fact increases the income inequality between beneficiaries and non-beneficiaries, both across the income deciles and within them.

Over 48% of all Czech households receive meal allowances, and these constitute 1.14% of the average household's net income. More affluent households reap higher benefits from the current meal allowance scheme. Among the top income deciles, participation in the meal allowance scheme stands at over 60%, with a high share of household members receiving meal allowances. Consequently, meal allowances constitute a larger share of these households' incomes both nominally and proportionately. Low-income households receive lower value meal allowances, have a lower participation rate in the scheme (less than 40%), and see a very low share of their household members granted meal allowances.

We therefore analysed a number of alternative scenarios. For example, if the rough budgetary estimate of CZK 11.3 billion were to be distributed in the form of flat meal allowances, this would foster income equality helping households in the lower income brackets, who would benefit primarily due to a greater number of individuals in their household receiving the benefit. However, as this is a zero-sum-game, such a change would be highly disadvantageous for more affluent households. Overall, we came to the conclusion that replacing the current system with a scheme granting fixed meal contributions to all economically active individuals would promote income equality across the income deciles most effectively.

6 The third alternative scenario posits a flat meal allowance of CZK 250 that would be granted to employees only and the fourth alternative scenario would see the current meal allowance budget distributed among employees only.

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