RP
No. 8
SSE Riga/BICEPS Research papers

FOREIGN OWNERSHIP AND LABOR TAX EVASION: EVIDENCE FROM LATVIA

Nicolas Gavoille
SSE Riga, BICEPS

Anna Zasova
BICEPS

November 2021

Postal address: Strēlnieku iela 4a, Riga, LV-1010, Latvia
Telephone: +371 67015870 Fax: +371 67015874
Website: www.sseriga.edu | www.biceps.org

Foreign ownership and labor tax evasion: Evidence from Latvia *

Nicolas Gavoille† Anna Zasova ‡

Abstract

This paper shows that in a context of widespread labor tax evasion, employees of foreign-owned firms receive less undeclared cash payments than employees of domestic firms. The empirical analysis relies on a combination of administrative and survey data and implements an expenditure-based underreporting analysis à la Pissarides and Weber (1989). This provides an alternative explanation for the wage premium for employees of foreign-owned firms observed in similar environments.

Keywords: FDI, Tax evasion, Envelope wage, Wage premium
JEL: E26, O17, O19, H26, H32

*We gratefully acknowledge funding from the Latvian Council of Science's FLPP research grant "Institutions and Tax Enforcement in Latvia" (InTEL) (grant No. LZP-2018/2-0067).

†Stockholm School of Economics in Riga, Strelnieku iela 4a, Riga LV-1010 - Latvia. E-mail : nicolas.gavoille@sseriga.edu

‡Baltic International Centre for Economic Policy Studies, Strelnieku iela 4a, Riga LV-1010 - Latvia. E-mail : anna@biceps.org

1 Introduction

A vast literature documents a wage premium for employees of foreign-owned firms (e.g., Heyman et al., 2007; Hijzen et al., 2013). This can result from self-selection of foreign firms in highly productive sectors (Guadalupe et al., 2012) or from a productivity increase (Harding and Javorcik, 2012). This paper provides evidence of a third driver: foreign-owned firms are more (labor) tax compliant than domestic firms.

Envelope wage, i.e., an unreported cash-in-hand complement to the official wage, is a widespread phenomenon in transition and post-transition countries (e.g., Gorodnichenko et al., 2009 in Russia, Putniņš and Sauka, 2015 in the Baltic States, Tonin, 2011 in Hungary). Employees are officially registered, but the income reported to tax authorities is only a fraction of the true income, the difference being paid in cash.

At the same time, many papers focus on Eastern European countries to study wage differences between domestic and foreign-owned firms (e.g., Hagemejer and Tyrowicz, 2012; Javorcik, 2004; Vahter and Masso, 2019). In a context of prevalent informality, the wage premium is however overestimated if domestic firms are more likely to underreport wages than foreign-owned ones (Braguinsky et al., 2014).

Our analysis relies on a combination administrative and survey data from Latvia, where envelope wage is considered to be the largest tax fraud issue (World Bank, 2017). Putniņš and Sauka (2015) estimate that 34% of total wages in Latvia is paid in envelope. Implementing an expenditure-based underreporting analysis *à la* Pissarides and Weber (1989), we find that underreporting is more prevalent in households lead by individuals working in domestic firms. We do not find any difference in the consumption behavior of households lead by employees of foreign-owned firms compared to households lead by public sector employees, who cannot engage in wage underreporting. This indicates that foreign-owned firms are on average payroll tax compliant whereas many domestic firms are not. In contexts of widespread labor tax evasion, the wage premium offered by foreign-owned firms has to be cautiously interpreted.

2 Methodology

Expenditure-based measures of income underreporting allow to estimate the extent of underreporting for a group of households using reported income and expenditures data (Pissarides and Weber, 1989; Hurst et al., 2014). They rely on two main assumptions: i) a type of expenditures (usually food) is accurately reported for all groups; ii) at least one group in the population is tax compliant, accurately reporting income. For household i expenditure on food c_i and permanent income y_i^P are related via an Engel curve as follows:

$$ln\ c_i = \alpha + \beta ln\ y_i^P + \theta' X_i + \epsilon_i, \tag{1}$$

where β is the income elasticity, X_i is a set of controls and ϵ_i is an error term. Consumption depends on the permanent income, which is composed of the annual income y_i and a transitory component. Assuming that all households correctly report their current income, we can write

$$ln\ y_i = ln\ y_i^P + \Omega' X_i + \nu_i, \tag{2}$$

where $\Omega' X_i$ and ν_i respectively represent the predictable and unpredictable parts of transitory income, with $E[X_i \mu_i] = 0$ and $E[\mu_i \epsilon_i] = 0$. Combining equation 2 and 3, we obtain:

$$ln\ c_i = \alpha + \beta ln\ y_i + \Psi' X_i + \zeta_i, \tag{3}$$

where $\Psi = \theta - \beta\Omega$ and $\zeta_i = \epsilon_i - \beta\nu_i$.

Consider now that there are two groups k of households: the tax compliant group $k = C$ and the underreporting group $k = U$. For households in the former group, the observed income is the true income, whereas households in the latter group systematically underreport earnings by a factor κ:

$$ln\ y_{iC} = ln\ y_{iC}^P + \Omega' X_{iC} + \nu_{iC}, \tag{4}$$

$$ln\ y_{iU} = ln\ \kappa_U + ln\ y_{iU}^P + \Omega' X_{iU} + \nu_{iU}. \tag{5}$$

Assuming that the parameters of the Engel curves and precision of food expenditure reporting are similar across the two groups, we can estimate the misreporting

factor κ by estimating the following equation, obtained by combining equations 3, 4 and 5:

$$ln\ c_{ik} = \alpha + \beta ln\ y_{ki} + \gamma D_i + \Psi' X_{ik} + \zeta_{ik}, \tag{6}$$

where D is a dummy variable taking the value 1 for households in the tax evading group. The fraction of income reported by households of the evading group is hence $\kappa = exp(-\frac{\gamma}{\beta})$, and the share of underreported income is given by $1 - \kappa$.

This method has been extensively used to study income underreporting of the self-employed using employees as the reference group (see Kukk et al., 2020 for a survey). In this paper, we mainly focus on two household groups: households where the head is 1) employee of a foreign-owned firm (reference category) and 2) employee of a domestic firm. This allows to test whether households in the latter group are more likely to receive undeclared payment than households in the former. Note that κ is a *relative* measure: it is an estimate of the difference in underreporting between the two groups, and underreporting in the reference group need not be 0. As a lower benchmark, we introduce a third group composed of households where the head is a public sector employee, since they cannot collude with employers to underreport wages.[1] Finally, we consider a fourth group of households, where the head is self-employed. Income underreporting is often considered to be widespread among self-employed because of the lack of third party reporting. This group provides an upper benchmark. In our analysis γD_i hence represents a set of up to three dummies.

3 Data

The analysis is based on a combination of administrative and survey data. First, we use the 2020 round of the Latvian Household Budget Survey (HBS), providing information on households for 2019 (hence before the COVID-19 crisis). This survey is implemented by the Latvian Central Statistical Bureau (CSB). It provides detailed information on household consumption, income and characteristics. The 2020

[1]Public sector employees can receive bribes. However, Latvia's Corruption Perception Index increased from 34 in 2000 to 57 in 2020 (EU average: 64), indicating a sharp decrease in the magnitude of (perceived) corruption. Latvians declaring to have experienced or witnessed a case of corruption in the past 12 months is equal to the EU average (5%, European Commission, 2020).

round is the first to collect household members' individual ID (anonymized). We can merge HBS with an administrative matched employer-employee dataset providing information on wage for the whole population of employees in Latvia. Using firm IDs contained in this dataset, we can merge it with a third data source from CSB providing detailed information on firms' foreign-ownership status.[2]

Our sample includes households where the main breadwinner is either employed by a domestic firm, a foreign-owned firm, working in the public sector or self-employed. The set of controls contains a standard mix of household and individual level variables: the size and the number of adults in the household, a dummy indicating whether the household is located in an urban area, the age of the household head and a series of dummies indicating: whether the dwelling is rented, whether the head is a woman, whether the head works full-time. Finally, we also have a set of dummies indicating the level of education that will be used as instrument, as described below. Table 1 provides descriptive statistics.

Comparing domestic and foreign-owned households[3], domestic households spend a higher share of their income on food. The model assumes that the Engel curves differ between the two groups in the intercept and not in the slope. To verify whether this assumption is plausible, figure 1 plots a non-parametric Engel curve for the two groups.[4] The two curves exhibit a fairly similar behavior. The Engel curve for domestic households always lies above the one for foreign-owned households: for a given income, domestic households always spend a larger fraction on food than foreign-owned ones.

[2]See Gavoille and Zasova (2021) for a detailed description of the institutional context.

[3]For convenience, we denote "household where the head is an employee of a foreign-owned firm" as simply "foreign-owned households". Similar simplification applies to other household groups.

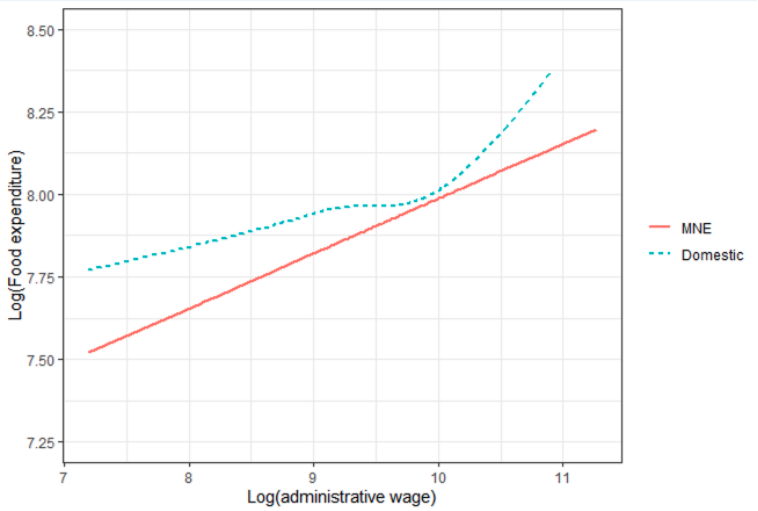
[4]We strictly follow Hurst et al. (2014). We regress (administrative) wage and food consumption separately on demographic controls to condition out these factors. We recenter the residuals at the unconditional averages for each group and use these residuals to estimate the Engel curve with a cubic spline.

Table 1: Descriptive statistics

		All		Domestic		MNE	
		Mean	Median	Mean	Median	Mean	Median
Log food consumption		7.881	7.923	7.845	7.886	7.931	7.987
Log income (survey)		9.473	9.468	9.428	9.412	9.664	9.627
Log wage (administrative)		9.143	9.189	9.013	9.044	9.507	9.506
# adults		2.117		2.114		2.280	
HH size		2.640		2.657		2.913	
Rent		0.163		0.172		0.161	
Urban		0.639		0.629		0.679	
Age		48.479	49	47.435	48	43.099	43
Woman		0.48		0.352		0.366	
Full-time		0.948		0.952		0.994	
Education	Primary	0.064		0.1		0.068	
	Secondary	0.558		0.661		0.578	
	Higher	0.377		0.239		0.354	
N		1254		545		161	

Source: HBS survey, provided by the Latvian Statistical Bureau. Monetary variables are expressed in log of 2019 Euro.

Figure 1: Engel curve



4 Results

In equation 6, the reported income is endogenous by construction: $E[ln\ y_i\zeta_i] \neq 0$. We follow Hurst et al. (2014) and instrument current income by education of the household head.

We use two alternative measures of current income. First, we link survey to administrative data and compute the total household yearly net labor market income reported to tax authorities. This allows to overcome the usual problem of measurement error in surveys, but does not provide information on other sources of income such as transfers and capital income.[5] In case of systematic differences in these other income sources between domestic and foreign-owned households, the estimates will be biased. Second, we use the household total income from the HBS survey. This is subject to measurement error and manipulation but provides information on the total household income.

Table 2 displays the 2SLS estimates of equation 6.[6] Column 1 reports the results obtained when all the households in the sample are used. The γ estimate

[5]The administrative dataset does not provide information on self-employed earnings, so we drop this household category when using this measure of current income.

[6]The first stage results are provided in Appendix A.

for domestic households indicates that they are more likely to underreport income than foreign-owned households. On average, domestic firm households are estimated to conceal 26% more income than foreign-owned ones. At the same time, public sector households do not exhibit a significantly different food consumption pattern than foreign-owned firm households. Assuming that public sector households cannot evade, foreign-owned firm households hence do not underreport.

In column 2, we run the same model but restrict the sample to households where the head is below 50-year-old and is employed full-time. In column 3, we further restrict the sample to only foreign-owned and domestic households. Results confirm the significant underreporting of domestic households, suggesting an even greater magnitude (about 40%).[7]

Columns 4-6 show the results when using the survey total income. Results are largely consistent with those previously obtained. The estimated underreported fraction is of smaller magnitude (10 to 20%). This is consistent with Cabral et al. (2019), who obtain estimates of underreporting among self-employed households half as large when using survey data instead of administrative data. With this alternative measure of current income, we can also now estimate underreporting for self-employed households. The share of underreporting for the self-employed, around 30%, is very similar to the estimates of Kukk et al. (2020) for Latvia. Underreporting among domestic households is thus bounded between foreign-owned and self-employed underreporting.

5 Conclusion

In a context of widespread labor tax evasion, the observed wage premium for employees of foreign-owned firms can be driven by payroll tax compliance. How much of the wage premium can underreporting explain? The first-stage IV results suggest a net wage premium of 13 to 35% (using respectively survey and administrative data from column 4 and 1 of Table A.1) for the group of foreign-owned households. This

[7] In addition, we also estimate models including the number of employees in the firm, computed from the administrative dataset. Point estimates and standard errors are extremely close to those displayed in Table 2.

Table 2: Engle curve estimation results

	Dependent variable: log food consumption					
	(1)	(2)	(3)	(4)	(5)	(6)
	All	50YO & FT	MNE & Domestic	All	50YO & FT	MNE & Domestic
β (Income elasticity)	0.311***	0.369***	0.317***			
	(0.051)	(0.071)	(0.074)			
β (Income elasticity)				0.458***	0.565***	0.508***
				(0.068)	(0.103)	(0.113)
γ (domestic firms)	0.093**	0.190***	0.168**	0.050	0.126**	0.120**
	(0.047)	(0.064)	(0.065)	(0.042)	(0.055)	(0.056)
γ (public sector)	0.065	0.075		0.068	0.091	
	(0.044)	(0.059)		(0.042)	(0.057)	
γ (self-employed)				0.168**	0.259***	
				(0.074)	(0.098)	
$1-\kappa$ (fraction underreported)	0.258	0.402	0.411	0.103	0.199	0.210
Weak instruments	101.936	49.543	39.02	121.184	60.414	46.098
p-value	0.000	0.000	0.000	0.000	0.000	0.000
Wu-Hausman	15.313	11.586	8.270	1.544	3.559	1.409
p-value	0.000	0.001	0.004	0.214	0.064	0.218
Sargan	0.005	0.149	1.000	0.018	0.644	1.518
p-value	0.946	0.700	0.317	0.892	0.422	0.218
Observations	1210	601	399	1254	623	399
R2	0.287	0.267	0.264	0.396	0.375	0.379

Note: *** p<0.01, ** p<0.05, * p<0.1. 2SLS estimation results. Robust standard errors in parentheses. All the regressions include the set of controls described in section 3.

roughly corresponds to the magnitude of the underreporting factor, indicating that nearly all of the wage premium can be explained by labor tax evasion. Even though the precise underreporting point estimates should be cautiously interpreted and this 1-to-1 relation is anecdotal, this nevertheless highlights the potential importance of envelope wages in explaining the wage premium of employees of foreign-owned when labor tax evasion is prevalent.

References

Braguinsky, S., Mityakov, S., Liscovich, A., 2014. Direct estimation of hidden earnings: Evidence from russian administrative data. The Journal of Law and Economics 57, 281–319.

Cabral, A.C.G., Gemmell, N., Alinaghi, N., 2019. Are survey-based self-employment income underreporting estimates biased? New evidence from matched register and survey data. International Tax and Public Finance , 1–39.

European Commission, 2020. Special Eurobarometer 502: Corruption.

Gavoille, N., Zasova, A., 2021. What we pay in the shadow: Labor tax evasion, minimum wage hike and employment. Technical Report. BICEPS Working Paper Series.

Gorodnichenko, Y., Martinez-Vazquez, J., Sabirianova Peter, K., 2009. Myth and reality of flat tax reform: Micro estimates of tax evasion response and welfare effects in russia. Journal of Political economy 117, 504–554.

Guadalupe, M., Kuzmina, O., Thomas, C., 2012. Innovation and foreign ownership. American Economic Review 102, 3594–3627.

Hagemejer, J., Tyrowicz, J., 2012. Is the effect really so large? Firm-level evidence on the role of FDI in a transition economy. Economics of Transition 20, 195–233.

Harding, T., Javorcik, B.S., 2012. Foreign direct investment and export upgrading. Review of Economics and Statistics 94, 964–980.

Heyman, F., Sjöholm, F., Tingvall, P.G., 2007. Is there really a foreign ownership wage premium? Evidence from matched employer–employee data. Journal of International Economics 73, 355–376.

Hijzen, A., Martins, P.S., Schank, T., Upward, R., 2013. Foreign-owned firms around the world: A comparative analysis of wages and employment at the micro-level. European Economic Review 60, 170–188.

Hurst, E., Li, G., Pugsley, B., 2014. Are household surveys like tax forms? Evidence from income underreporting of the self-employed. Review of economics and statistics 96, 19–33.

Javorcik, B., 2004. Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. American economic review 94, 605–627.

Kukk, M., Paulus, A., Staehr, K., 2020. Cheating in europe: Underreporting of self-employment income in comparative perspective. International Tax and Public Finance 27, 363–390.

Pissarides, C.A., Weber, G., 1989. An expenditure-based estimate of britain's black economy. Journal of Public Economics 39, 17–32.

Putniņš, T.J., Sauka, A., 2015. Measuring the shadow economy using company managers. Journal of Comparative Economics 43, 471–490.

Tonin, M., 2011. Minimum wage and tax evasion: Theory and evidence. Journal of Public Economics 95, 1635–1651.

Vahter, P., Masso, J., 2019. The contribution of multinationals to wage inequality: Foreign ownership and the gender pay gap. Review of World Economics 155, 105–148.

World Bank, 2017. Latvia Tax Review. Washington, D.C. : World Bank Group.

A IV first stage results

Table A.1: IV FIRST STAGE RESULTS

Dependent variable:	*log income (administrative)*			*log income (survey)*		
	(1)	(2)	(3)	(4)	(5)	(6)
	All	50YO & FT	MNE & Domestic	All	50YO & FT	MNE & Domestic
Secondary education	0.164**	0.162*	0.180*	0.168***	0.152***	0.130**
	(0.076)	(0.091)	(0.107)	(0.049)	(0.051)	(0.060)
Higher education	0.736***	0.731***	0.848***	0.554***	0.503***	0.538***
	(0.081)	(0.098)	(0.121)	(0.052)	(0.057)	(0.070)
Domestic	−0.321***	−0.388***	−0.379***	−0.123***	−0.142***	−0.142***
	(0.056)	(0.073)	(0.073)	(0.038)	(0.044)	(0.044)
Public	−0.167***	−0.203***		−0.117***	−0.153***	
	(0.056)	(0.076)		(0.040)	(0.051)	
Self-employed				−0.021	−0.074	
				(0.080)	(0.074)	
Full time	0.875***			0.253***		
	(0.119)			(0.063)		
# Adults	0.133***	0.104**	0.081	0.151***	0.109***	0.085**
	(0.035)	(0.047)	(0.060)	(0.021)	(0.025)	(0.034)
HH size	0.049**	0.046	0.073*	0.079***	0.095***	0.110***
	(0.025)	(0.033)	(0.043)	(0.014)	(0.017)	(0.021)
Rent	−0.132**	−0.174**	−0.148	−0.075***	−0.091**	−0.089*
	(0.053)	(0.076)	(0.093)	(0.032)	(0.043)	(0.052)
Urban	0.089**	0.116*	0.009	0.072***	0.102***	0.082**
	(0.040)	(0.061)	(0.078)	(0.022)	(0.032)	(0.038)
Gender	−0.346***	−0.449***	−0.447***	−0.265***	−0.237***	−0.247***
	(0.044)	(0.065)	(0.091)	(0.025)	(0.037)	(0.047)
Age	−0.007***	0.003	0.000	−0.001	−0.003	−0.003
	(0.002)	(0.004)	(0.005)	(0.001)	(0.002)	(0.003)
Constant	8.205***	8.876***	8.942***	8.663***	9.056***	9.090***
	(0.173)	(0.203)	(0.255)	(0.114)	(0.111)	(0.130)
Observations	1210	601	399	1254	623	399
R2	0.365	0.291	0.293	0.478	0.417	0.443
F-Statistics	62.698***	24.185***	17.948***	94.882***	39.927***	34.331***

NOTE: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.