Driving forces of informal employment: An empirical study based on Polish enterprise data

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Motivation

- the informal sector together with the broadly understood shadow economy is of interest to both the scientific community and government institutions
- research areas related to the shadow economy are considered extremely important and require further exploration
- a dichotomy between the formal and informal sectors, which contributes to the marginalization of hybrid phenomena occurring on the borderline of the informal zone
- informal employment existing in registered enterprises

Driving forces of informal employment: literature review

- severity of taxes: in countries with higher level of taxes the prevalence of shadow economy and informal employment should be larger. Empirical evidence inconclusive in this matter (Nur-Tegin, 2008; Joulfaian, 2009; Bernasconi, Corazzini and Seri, 2014)
- social and moral determinants; non-economic social factors are becoming more and more relevant in explaining the inclination to be engaged in shadow economy (Pickhardt and Prinz, 2014); plenty of research investigates the relationship between tax morale and tendency to evade taxes (Alm, Martinez-Vazque & Torgler, 2006; Alm & Torgler, 2006; Torgler, 2005; Torgler Schneider, 2009)
- institutional factors like the quality of institutions (Torgler & Schneider, 2007; Hanousek & Palda 2004, Barone & Mocetti, 2011)

Aim of this study

Our aim is to investigate the main drivers of informal employment in Poland.

Survey design

- survey conducted among polish small and medium (SMEs) enterprises
- representative sample of 952 Polish entrepreneurs
- survey carried out between November and December 2018
- CATI method (computer-assisted telephone interview)
- respondents: owners or highest level managers of Polish private enterprises
- quota sampling regarding the specific number of companies according to the size (less than 9 employees, 10-49, and 49-250 employees)
- within each group stratified random sampling scheme with two stratas: NUTS 2 units and four main sectors (manufacturing, construction, retail and services)
- tools for surveys on sensitive topics applied

Outcome variable

- In particular, the question on the informal employment activities has been formulated as follows: "Due to high non-wage labour costs, some entrepreneurs use various mechanisms to minimize these burdens. Bearing in mind the companies operating in your industry, please asses what proportion of employees are employed informally?"
- Our dependent variable is recoded into binary one, where 0 means that respondent indicates no extent of informal employees in firms in their industry and 1 if there is any extent of informal employees

Descriptive statistics (1)

	N	mean	sd	min	max
Dependent variable					
infempl (1 if any extent of informal employment)	734	0.53	0.50	0.00	1.00
infempl_2 (the share of informal employment in total employment)	734	12.74	18.17	0	100
Explanatory variables					
tax burden (Please estimate the severity of the amount of tax burden using the following scale: 1 = no obstacle. 2 = slight obstacle. 3 = moderate obstacle. 4 = large obstacle)	952	3.19	0.86	1.00	4.00
tax morality (social approval of tax avoidance in Poland: 1 (strongly agree) to 5 (strongly disagree))	952	2.64	1.17	1.00	5.00
setting_up_business (to what extent the company's development is hampered by formalities related to setting up a business: 1 = no obstacle. 2 = slight obstacle. 3 = moderate obstacle. 4 = large obstacle)	952	1.84	0.97	1.00	4.00

Descriptive statistics (2)

micro_firm (1 if company with less than 9 employees)	952	0.40	0.49	0.00	1.00
small_firm (1 if company with 10-49 employees)	952	0.40	0.49	0.00	1.00
medium_firm (1 if company with more than 50 employees)	952	0.20	0.40	0.00	1.00
young (1 if the age of the company is less than 5 years)	952	0.06	0.24	0.00	1.00
average (1 if the age of the company is between 5-20 years)	952	0.54	0.50	0.00	1.00
old (1 if the age of the company is more than 20 years)	952	0.40	0.49	0.00	1.00
village (1 if the company is located in a village or a city with less than 10.000 population)	952	0.26	0.44	0.00	1.00
small_city (1 if the company is located in a city with 10.000-100.000 population)	952	0.34	0.48	0.00	1.00
big_city (1 if the company is located in a city with more than 100.000 population)	952	0.40	0.49	0.00	1.00
construction (1 if company operates in the construction sector)	952	0.11	0.31	0.00	1.00
manufacturing (1 if company operates in the manufacturing sector)	952	0.38	0.49	0.00	1.00
retail (1 if company operates in the retail sector)	952	0.10	0.29	0.00	1.00
service (1 if company operates in the service sector)	952	0.42	0.49	0.00	1.00

Model

In order to estimate the driving forces of informal employment we use the following formula:

$$\Pr(Y_i = 1) = F(\beta_0 + \beta_1 Reason_i + \beta_2 Firm_i + \beta_3 Industry_j + e_i) \quad (1)$$

where $F(z) = e^z/(1+e^z)$ is the cumulative logistic distribution,

$Reason_i$ are variables representing possible determinants of informal employment

$Firm_i$ is a set of variables describing firms' characteristics (enterprise size and age, location),

$Industry$ accounts for field of economic activities aggregated to construction, retail, services and manufacturing).

Results

Dependent variable: informal employment	(1)	(2)
tax burden	-0.185	-0.212
	[0.144]	[0.141]
tax morality	-0.155*	-0.204*
	[0.094]	[0.108]
setting_up_business	0.408***	0.413***
	[0.127]	[0.124]
small firm	-0.182	-0.169
	[0.192]	[0.188]
medium_firm	-0.511**	-0.515**
	[0.230]	[0.240]
young	0.343	0.321
	[0.532]	[0.569]
old	0.121	0.173
	[0.259]	[0.261]
village	-0.093	-0.064
	[0.326]	[0.352]
big city	0.299	0.436
	[0.262]	[0.316]
construction	1.001**	1.147**
	[0.458]	[0.489]
retail	-0.005	0.073
	[0.409]	[0.425]
service	0.171	0.263

Robustness check

Dependent variable: informal employment_2	(1)	(2)	(3)	(4)
Zero inflated model				
tax_burden	0.138	2.041***	1.666***	0.155*
	[0.094]	[0.317]	[0.421]	[0.094]
tax morality	0.127*	1.941***	1.856***	0.117*
	[0.066]	[0.252]	[0.333]	[0.065]
setting_up_business	-0.282***	-3.005***	-2.326***	-0.269***
	[0.085]	[0.305]	[0.228]	[0.082]
small_firm	0.190	6.256***	2.234***	
	[0.180]	[1.015]	[0.605]	
medium_firm	0.501**	2.887***	2.988***	
	[0.223]	[0.689]	[0.844]	
young	0.122	10.332***	99.910***	
	[0.359]	[1.152]	[3.770]	
old	0.029	1.733***	3.536***	
	[0.168]	[0.616]	[0.639]	
village	0.179	8.150***	0.126	
	[0.210]	[0.970]	[0.846]	
big_city	-0.140	-1.592**	-3.929***	
	[0.187]	[0.670]	[0.773]	
construction	-0.610**	-3.301***		
	[0.278]	[1.013]		
retail	-0.293	-2.274**		
	[0.296]	[0.945]		
service	-0.176	-5.364***		
	[0.187]	[0.745]		
_cons	-0.619***	-0.616***	-0.663***	-0.590***
	[0.078]	[0.069]	[0.066]	[0.078]
ll	-2058.62	-1591.41	-1582.36	-2069.88
N	734	73	734	734
N_zero	347	347	347	347

Notes: Zero-inflated negative binomial regression with robust standard errors; standard errors in parentheses; regional dummies included but not reported (aside from model (2); variable description as in Table 1; default categories: small_firm, average_firm, small_city, and manufacturing.
*p ≤.10, **p ≤.05, ***p ≤.01.

Conclusions

- the main aim of this paper is to find possible determinants of using informal workers
- tax morality and obstacles related to setting up a business as significant factors influencing the probability of using informal workers
- we do not find any clear relationship between the tax severity and the inclination to using informal workers among polish enterprises

Thank you for your attention.

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