

The World Bank

The Scope and Main Characteristics of Informal Employment in Ukraine

Technical Note for the Government of Ukraine

This short note has been prepared at the request of the Ministry of Social Policy of Ukraine to the World Bank and aims at providing counterparts with analysis of the scope and main characteristics of informal employment in Ukraine. Based on this profiling, expected fiscal gains from formalizing informal workers are roughly estimated. The main findings of this study will allow counterparts to engage further in the policy dialogue and to provide some more detailed policy suggestions.

The note was compiled by Olga Kupets, Department of Economics, National University "Kyiv-Mohyla Academy", Kiev and benefited from comments and editing of Johannes Koettl (Team leader, *Europe and Central Asia Region - Human Development Sector, ECSDH*), Indhira Santos (Young Professional, ECSDH), and Anna Olefir (ET Consultant, ECSDH). The team is grateful to Ms. Natalia Kobryanskaya and other staff of the Labor Force Survey Department (State Statistics Service of Ukraine) for providing micro-level data and guidance.

The views expressed in this paper are those of the author and do not necessarily represent the views of the World Bank and the institution with which the author is affiliated.

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Executive Summary

This paper is a profiling of informality in Ukraine's labor market.

Informality in Ukraine is widespread and can take different forms. In 2009, 4.5 million people in Ukraine between the ages of 15-70 worked in the informal sector, equivalent to 22.1 percent of total employment. The great bulk (61 percent) of this informal employment is in private agricultural production units, including unpaid family workers; but another third one corresponds to wage workers under oral agreements in the non-agricultural sector; and the remainder refers to unpaid family workers and self-employed outside agriculture.

Informality is, however, concentrated in particular sectors and socio-economic groups. In Ukraine, informality is concentrated in rural areas, partly because of the prevalence of informality in the agricultural sector. Informality is also most common among the low-skilled, those aged 60-70 years and slightly more prevalent among men than women.

Informal wage employment is similarly concentrated among specific sectors and groups, although they are different from those related to overall informality. Contrary to overall informality, informal wage employment is most prevalent among youth. In terms of types of firms, most of the informal wage employment is concentrated (and is most prevalent) in micro and small enterprises, as well as in informal rather than formal firms. Still, at least 6 percent of wage employment in formal firms is estimated to be informal. Three particular sectors have important concentrations of informal wage workers: construction, trade & repair and agriculture, both as a result of high informality rates as well as due to these sectors also representing important shares of total employment in Ukraine. Mirroring this, three types of occupations gather most informal workers: craft & related workers, elementary occupations and service workers & shop and market sales.

Fiscal gains from increased formalization appear modest and highly uncertain, although these do not account for other benefits associated with formalization. Under a number of assumptions, we estimate that the theoretical maximum fiscal gains from social insurance contributions and personal income tax of increased formalization are estimated at 627.5 million UAH. A more realistic, yet still theoretical scenario implies fiscal gains of around 251.4 million UAH, assuming that only one third of jobs is lost or remains undeclared when the firms become formal. However, actual fiscal gains are likely to be even significantly lower, given the current low number of inspectors in Ukraine and the uncertain effects of deterrence in the absence of broader measures to increase productivity and overall improvement of the business environment.

Although fiscal gains may be limited initially, formalization is also associated with increased productivity, increased investment in human capital and more innovation which eventually could also lead to higher fiscal gains if the existing disincentives to formalize are removed.

1. Introduction

This paper is a profiling of informality in Ukraine's labor market. The objective is to inform policy-makers about the characteristics of informality, the different types that exist, the sectors where informality is most prevalent and the characteristics of individuals working in the informal sector in the country.

For this purpose, we take informality to include not only work in informal firms (non-registered, with less than five employees), but also employees holding informal (primary) jobs in formal sector enterprises (depending on whether they have a signed official labor contract or agreement). Section 2 provides a more detailed discussion of the definition of informality we use.

The rest of the paper is organized as follows. After defining informality, it provides a general discussion of informality in Ukraine and then focuses on the key characteristics of informal wage employment, where arguably the most potential for formalization exists. Next, the paper provides estimates of the cost of informality in terms of forgone fiscal revenues under three different scenarios.. Finally, there is a summary of key findings and take-aways.

2. Statistical definition of employment in the informal sector and informal wage employment in Ukraine

The national methodology for the measurement of employment in the informal sector in Ukraine is based on the international statistical definition of the informal sector, adopted by the Fifteenth International Conference of Labour Statisticians (15th ICLS) in 1993 and subsequently included in the revised System of National Accounts (SNA 1993).

According to the 15th ICLS, *persons employed in the informal sector are defined as comprising all persons who, during a given reference period, were employed in at least one production unit of the informal sector, irrespective of their status in employment and whether it was their main or a secondary job.* Therefore, this definition is formulated in terms of characteristics of production units in which the activities take place (enterprise approach), rather than in terms of the characteristics of the persons involved or of their jobs (labor approach).

In order to distinguish informal sector enterprises from other unincorporated enterprises owned by households, the 15th ICLS recommended to use one or more of the following three criteria: (i) non-registration of the enterprise; (ii) small size in terms of employment; and (iii) non-registration of the employees of the enterprise.¹ Following these recommendations, State Statistics Service of Ukraine defines the informal sector as a group of production units (both non-agricultural and agricultural) which satisfy the following criteria:

- market orientation of their economic activity (at least some of the goods or services produced are meant for sale or barter);
- limited number of employees (up to five employees according to ILO recommendations);

¹ More information can be found in the ILO KILM 7 "Employment in the informal sector".

- the enterprise (entrepreneurial activity) is not registered in accordance with national legislation.

The framework proposed by the 15th ICLS resolution allows countries to develop more specific definitions of the informal sector at the national level by introducing further criteria on the basis of the data collected. Accordingly, *the national methodology in Ukraine extends the definition of employment in the informal sector by including employees holding informal jobs in formal sector enterprises. Employees are considered to have informal jobs if their employment relationship with an employer is established by oral agreement without signing any official labor contract or agreement.*

In our study *informal wage employment is defined as comprising all employees holding informal jobs at primary employment, i.e. those employed by oral agreement, irrespective of the legal status of their employers.* This is in line with the EU definition of undeclared work as: “any paid activities that are lawful as regards their nature but not declared to the public authorities, taking into account differences in the regulatory system of member States. Applying this definition, criminal activities would be excluded, as would work not covered by the usual regulatory framework and which does not have to be declared...” (EC, 1998). However, according to OECD (2004, Table 5.1), informal wage employment in our case consists of *purely informal employment* (purely informal production, no concealment because no requirement to declare employment or earnings) and *wholly undeclared work* (underground production, employment status and earnings are concealed in collusion with the employer).

On the other hand, given limitations of our data, we do not consider cases of *under-declared work* when employee status is declared, but part of earnings is concealed in collusion with the employer (so called “envelope wages”),² as well as cases of *wholly undeclared work or black market work at secondary employment* (when a person with declared employee status in the main job works in a secondary job as an employee or self-employed with earnings concealed in collusion with the employer/purchaser).

The major statistical source of information about employment in the informal sector in Ukraine is the Labor Force Survey (national name - sample survey of economic activity of the population) conducted on a regular basis by the State Statistics Service of Ukraine (SSSU) since 1999. The LFS sample is nationally representative and covers the civilian, non-institutionalised population between the ages of 15 and 70.

It is worth noting that currently the SSSU together with international colleagues from the ILO is developing and testing the new methodology moving from enterprise approach and measuring employment in the informal sector (according to the 15th ICLS definition) to labor approach and measuring informal employment (according to the 17th ICLS definition).

In our analysis we use the following indicators of informality:

² According to the public opinion poll performed by the Razumkov Centre Sociological Service in April, 2010, 29.8% of respondents reported that the practice of wage payment “in envelopes” was very spread in their region of residence, another 36.2% – rather spread, and only 14.6% – that there were separate cases, or this was not the case at all. Polled experts appear to be even less optimistic: 44.3% of them reported that the practice of envelope wages was very spread in their region. Furthermore, a significant share of respondents (45% among surveyed individuals and 43.4% among experts) did not believe that Ukrainians would exchange wages “in envelopes” for wide social guarantees. See detailed results of the survey in UCEPS (2010).

- the absolute number of informal workers defined according to the definitions presented above (in persons or thousand persons);
- the share of some category (i.e. a group of people possessing some quality in common) in the total employment in the informal sector (in %);
- the informality rate (or the incidence of employment in the informal sector) in some particular category defined as the ratio of the number of informal workers in this category to the total number of employed persons in the same category (in %).

3. Profiling Informality in Ukraine

3.1. Total employment in the informal sector in 2009³

According to the LFS in 2009, the total employment in the informal sector was 4,469,860 persons, or 22.1% of the total employment (for the population aged 15-70 years). For comparison, in 2008 it was about 4,563,800 persons (21.8 % of the total employment). In 2010, the number of those employed in the informal sector increased by 179.3 thousand persons to 4,649 thousand persons, or 22.9% of the total employment.

Statutes of employment in the informal sector. As Table 1 shows, the great bulk of employment in the informal sector (over 61%) is made up by the persons employed in private agricultural production units (PAPU), including unpaid family workers. However, informal employment of employees is also significant: roughly each third person employed in the informal sector is an employee by oral agreement, i.e. without a written labor contract with his/her employer and, therefore, is not subject to employment protection legislation, income taxation and social insurance. The number of such informal workers is 1,506,191 persons, or 9.15% of the total number of employees. However, if we exclude temporary labor emigrants from the sample, the number of informal workers declines by about 4% to 1,458,913 persons, with corresponding reduction in the informality rate to 8.91% of all employees working in Ukraine.

Urban/rural population. As expected, informal employment is widely prevalent among rural population (46.4% of total employed rural population in 2009), and relatively less widespread among urban population (10.6% of total employed urban population). Overall, more than two out of three persons employed in the informal sector are rural residents (3,019.7 thousand persons), and 80.4% of them are engaged in subsistence farming in private agricultural production units as own-account workers or unpaid family helpers. Consequently, the agriculture sector accounts for 65.7% of total employment in the informal sector which is equivalent to about 2.943 million jobs.

³ Analysis presented in this subsection (except for subsection on statuses of employment in the informal sector) is based on statistical information published in SSCU (2010), Tables 2.16-2.21.

Table 1. Number of workers employed in the informal sector by statuses, 2009

Type	Total sample		Sample without temporary labor emigrants*	
	Number, persons	Share, %	Number, persons	Share, %
Own-account workers and unpaid family workers in PAPU	2,733,127	61.15	2,733,127	61.80
Unpaid family workers not in PAPU	34,152	0.76	34,152	0.77
Self-employed (own-account workers and employers) in the non-agricultural sector	196,389	4.39	196,160	4.44
Employees by oral agreement	1,506,191	33.70	1,458,913	32.99
Total	4,469,860	100.00	4,422,352	100.00

Source: Author's calculation based on LFS-2009. Grouping of individuals by statuses is made by the LFS Department of the State Statistics Service of Ukraine (SSSU).

Note: Temporary labor emigrants are defined as employed persons who reported that their main place of work in the reference week was located outside Ukraine.

Gender. The incidence of employment in the informal sector is 2 percentage points higher among men than among women (23.1 versus 21.1%). This is mainly explained by the failure of the formal economy to create sufficient number of jobs with decent working conditions to absorb displaced workers from the downsized male-dominated industrial sectors (push effect), and higher propensity of men to take up riskier but often better rewarded jobs available in the informal economy (pull effect) (ETF, 2009; Lehmann et al., 2005). There is evidence that informal employment is generally a larger source of employment for women than for men in the developing world because it provides employment opportunities to certain groups of women which may not otherwise be available, and enables women to exercise a degree of choice, autonomy and flexibility with respect to balancing work and family responsibilities (Chant and Pedwell, 2008; ILO, 2002). This argument seems to be relevant in Ukraine too but to a lesser extent than in developing countries because of a lower degree of gender inequality in access to education and formal employment, generous maternity leave rules and protective labor legislation for female workers in Ukraine (Kupets, 2010). As a result, most Ukrainian women tend to prefer security, better working conditions and fringe benefits offered by the formal economy to the flexibility offered by the informal one, and only women whose opportunities in the formal economy are extremely scarce are likely to decide to move to the informal economy, typically as self-employed workers (Pignatti, 2010).

These gender differences in terms of the choice of employment status in the informal sector are supported by the LFS data: the share of informal self-employed or unpaid family workers among all persons of the corresponding gender engaged in the informal sector is 18.7 percentage points higher among women compared to men (76.2 versus 57.5 %). As a result, women prevail among the persons working informally for themselves or their households (54% or 1,605 out of 2,963.7 thousand persons), while the number of men working informally for another person or company (employees) almost twice as large as the number of women (1,005.3 versus 500.9 thousand persons).

Age. Analysis of informality rates by age groups reveals that the highest incidence of informal employment is typical of the oldest age group, i.e. persons aged from 60 to 70 years (60.8% in total population; 19.3% in urban areas; and 92.9% in rural areas). In our opinion, high

incidence of informal employment among the elderly in urban areas can be regarded as one of the consequences of low official retirement age in Ukraine (55 years for women and 60 years for men). Although the state cannot coerce the age of actual retirement with regard to private companies, it can influence the behavior of employers in the private sector setting an informal benchmark for them. As a result, the chances of able-bodied workers to find employment in the formal sector after reaching official retirement age either in the public or in the private sector are very limited. Another reason pushing the urban pensioners into participation in the labor force and into employment in the informal sector in particular is low pension replacement rates resulting in high poverty among the elderly. As far as a very high incidence of informal employment of older workers in rural areas is concerned, its main reason seems to be the same as for rural population in general, i.e. the lack of alternatives to subsistence farming and small-scale informal activities in rural areas.

Education. As has been already well documented in previous studies (see e.g. ETF, 2009; Lehmann et al., 2005), education is an important factor in determining selection into informal employment in Ukraine. Informal sector is the dominant employer of unskilled and low-skilled individuals with low educational attainment. Overall, 89.6% of persons with primary or no education and 54.6% of persons with lower secondary education found employment in the informal sector in 2009. For comparison, the incidence rates of informal employment among persons with complete general secondary education (high school graduates) and with complete higher education (university graduates) were 29.4% and 5.5%, respectively. Although the incidence of informal employment decreases with education in both urban and rural areas, there are significant differences in the magnitude of informality in all education groups (from a factor of 1.38 in the lowest education group to 3.95 in the highest education group) due to high informality in rural areas, primarily in the form of subsistence farming.

Leaving aside persons engaged in subsistence agriculture, informal employers, own-account workers and unpaid family workers, we turn our focus now to informal *wage* workers.⁴

3.2. Characteristics of informal wage employment in 2009⁵

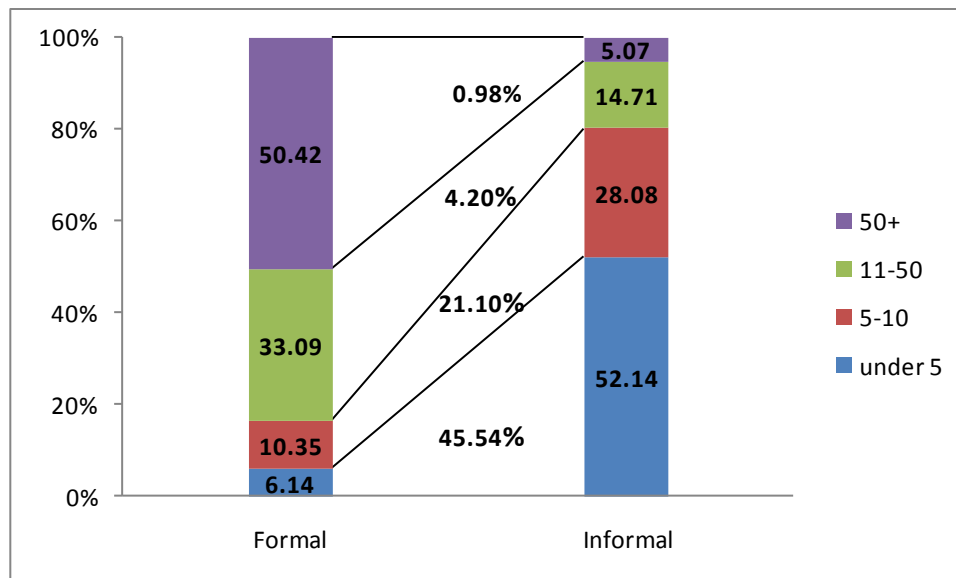
3.2.1. Firm characteristics

Size of enterprise (production unit) and regions. Like in many other countries, informal employment in Ukraine is primarily linked to micro and small enterprises. Over half of all informal employees work in micro-enterprises (with less than five employees), and another 28% work in establishments with 5 to 10 employees (Figure 1). Overall, small enterprises according to the national classification (up to 50 employees) account for 94.9% of total informal wage employment in Ukraine. Formal employment, on the other hand, shows the lowest percentage (6.14%) in micro-enterprises and the largest percentage (50.42%) in medium and large enterprises (over 50 employees).

⁴ Detailed analysis of employment in the informal sector in Ukraine as a whole can be found in ETF (2009). Tables with data for 2009 published in SSCU (2010) can be provided upon request.

⁵ Analysis presented in this subsection is based on author's calculations for the sample of employees holding informal job (i.e. by oral agreement) within Ukraine as primary employment, taken from the original individual-level LFS data in 2009. Yearly sample weights provided with the data set are used. Data presented here should be treated with caution as reliability of estimates decreases with an increase in the number of categories/ characteristics analysed.

Figure 1. Wage employment by employment size of enterprise and type of employment relationship*



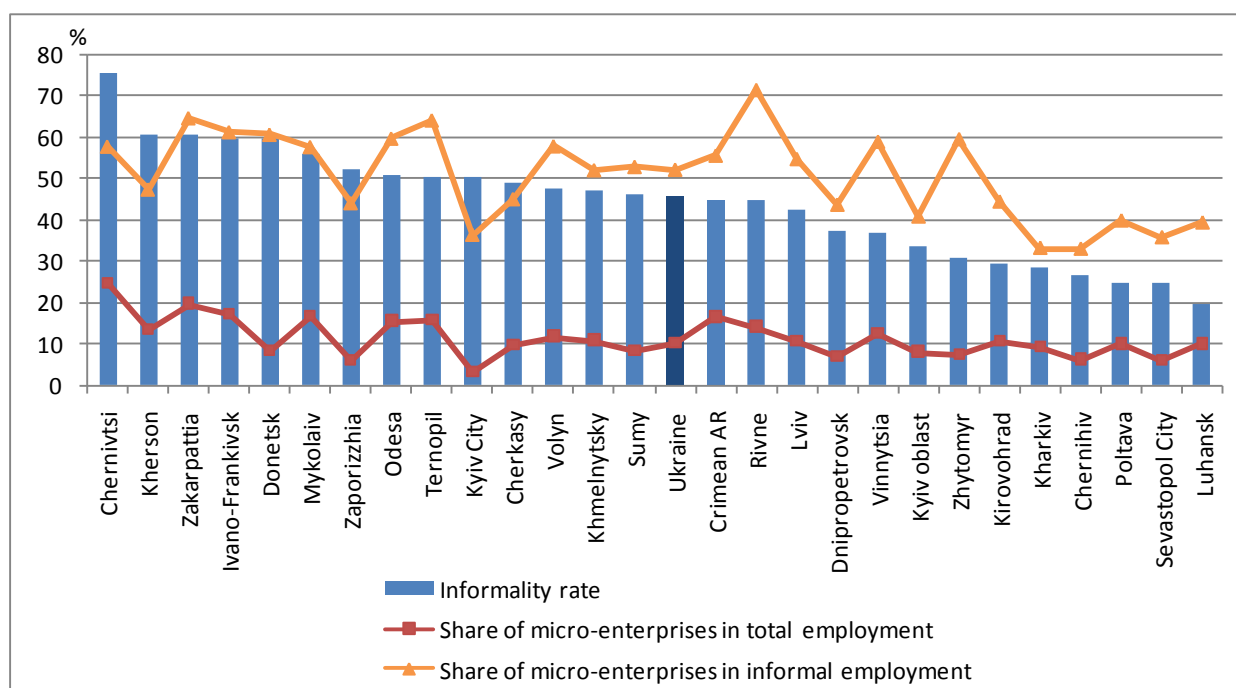
Note: *Figures between two bars stand for informality rates for the corresponding size group.

Therefore, the smaller the size of an enterprise (production unit) in terms of employment, the higher is the incidence of informal employment relationship: the share of informal workers in the total number of employees increases from less than 1% in medium and large enterprises to 45.5% in micro-enterprises (Figure 1).

However, a huge regional variation in the informality rate in micro-enterprises is observed: in 13 out of 27 administrative regions of Ukraine, most of which are located in the Northern, Central and Eastern parts of Ukraine, the informality rate is lower than the national average, while in the other 14 regions it is higher (see Figure 2). The highest rate is in Chernivtsi oblast located in the agricultural West (75.3%), while the lowest one is in Luhansk oblast from the industrialized East (19.4%). Strikingly, Chernivtsi oblast is also the leader in terms of the incidence of informal wage employment in the other three size groups (at 46.4, 8 and 7%, respectively). As a result, this oblast stands out sharply against all other regions having the incidence of informal wage employment in all enterprises at 32.3% (see Annex 1).

Overall, there is a positive correlation between the informality rate in micro-enterprises and the share of these enterprises in total and informal employment but, as Figure 2 shows, this relationship is not very strong. For example, in Rivne oblast the share of micro-enterprises in informal employment is much larger than in Chernivtsi oblast (71.5 vs. 57.8%) which has the largest incidence of informal employment in micro-enterprises. Hence, the relative importance of micro-enterprises in informal wage employment in regions depends not only on the informality rates in these enterprises but also on the contribution of larger enterprises to informal employment.

Figure 2. Informality rate in micro-enterprises and share of micro-enterprises in total and informal wage employment by regions of employment (in %)*



Note: *Region of employment is defined by the author based on the answers of employees about their place of work compared to the place of residence.

Economic sector. Survey results show that the highest incidence of informality is in private households with employed persons (90.8%), construction (39.4%), trade and repair (17.3%) and hotels and restaurants (16.6%). On the other hand, there are sectors that almost exclusively provide formal employment, such as public administration, education, health care and social work, and financial intermediation (Table 2). Fairly high incidence of informality in agriculture (13.3%) indicates that working for another farmer or agricultural firm (instead of working for one’s self in PAPU) does not guarantee formal employment relationship in roughly 13 out of 100 cases.

As Table 2 shows, a third of the total number of informal jobs (and 37.06% of non-agricultural jobs) was in construction, and slightly less was in trade and repair (30.93% of all jobs, and 34.71% of non-agricultural jobs). Although informal wage employment is less frequent in industry than in many other sectors (about 3.7% of all industrial workers work informally), this sector ranks fourth in total informal employment employing 9.64% of all employees in informal jobs and leaving behind sectors with traditionally high incidence of informality such as hotels and restaurants, municipal and individual services, and transport and communication.

However, the distribution of informal employment by economic sectors is not uniform across Ukrainian regions (see Annex 1). In 11 regions the top three sectors (marked by the orange color) are the same as in Ukraine in general (construction/ trade and repair/ agriculture) although they often follow in the different order. In 11 other regions agriculture is replaced by industry in the mentioned three sectors. Finally, 5 regions have their own top sectors in informal wage employment: in Zakarpattia oblast they are construction, agriculture and private households with employed persons; in Cherkasy oblast – construction, trade and

repair, and hotels and restaurants; in Chernihiv oblast – trade and repair, industry and agriculture; in Kyiv City – construction, trade and repair, and private households with employed persons, and in Sevastopol City – construction, trade and repair, and real estate and business activities.

Table 2. Wage employment by economic sector and type of employment relationship*

Economic sector	Informality rate, %	Share of sector in formal wage employment, %	Share of sector in informal wage employment, %
Agriculture	13.32	6.97	10.88
Industry	3.69	24.81	9.64
Construction	39.39	5.01	33.03
Trade and repair	17.28	14.59	30.93
Hotels and restaurants	16.59	1.82	3.67
Transport and communication	4.44	9.06	4.27
Financial intermediation, real estate and business activities	1.84	6.54	1.24
Public administration	0	7.33	0
Education	0.24	11.56	0.28
Health and social work	0.30	9.05	0.28
Municipal and individual services	8.61	3.24	3.09
Private households with employed persons	90.80	0.03	2.69

Note: *Information about sectors is based on the answers of respondents about the main economic activity of their enterprise. Then these activities are coded according to the National classification of types of economic activities (based on NACE Rev.1) at 4 digits. Aggregation into 12 larger sectors is made by the author.

Table 3 provides information about the most popular types of economic activity in informal wage employment and their respective shares. Each fourth informal worker hired by oral agreement is engaged in general construction of buildings and civil engineering works, predominantly in informal sector production unit (about 54% of these workers are hired by unregistered physical persons-entrepreneurs, production units or private households). The other most popular activities in terms of informal wage employment (with the total share of over 30%) are retail sale via stalls and markets or in non-specialized stores with food, beverages or tobacco, growing of cereals and mixed farming, domestic services for private households, and restaurants.

Type of enterprise (production unit). Informal wage employment is mainly concentrated in privately owned enterprises with sole proprietorship, which comprised 53.23% of the total (Figure 3). However, these enterprises also contribute a lot to formal wage employment, with a share of 24.4% of all formal jobs. Of all jobs in this type of enterprises, about 17.66% are informal.

Although state-owned enterprises and private companies with collective form of ownership (various partnerships, corporations, cooperatives, etc.) are the main providers of formal employment (42.06 and 31.25% of all formal jobs, correspondingly), they provide together about 6% of all informal jobs in Ukraine.

If we define *the formal sector as the one consisting of all types of enterprises (production units) except for unincorporated business entities, private households and private agricultural production units*, its share in informal wage employment is 59.42% (equivalent

to about 866.8 thousand jobs).⁶ Therefore, formal enterprises do supply the bulk of informal jobs, though at a much lower rate than production units typical for the informal sector: the average incidence of informal wage employment in all formal sector enterprises is 5.64% as opposed to 66.75% in informal sector enterprises. On the other hand, some representatives of unincorporated business (most of whom are presumably physical persons-entrepreneurs operating on a simplified system of taxation) are likely to offer employment with written contracts (about 2% of all formal jobs).

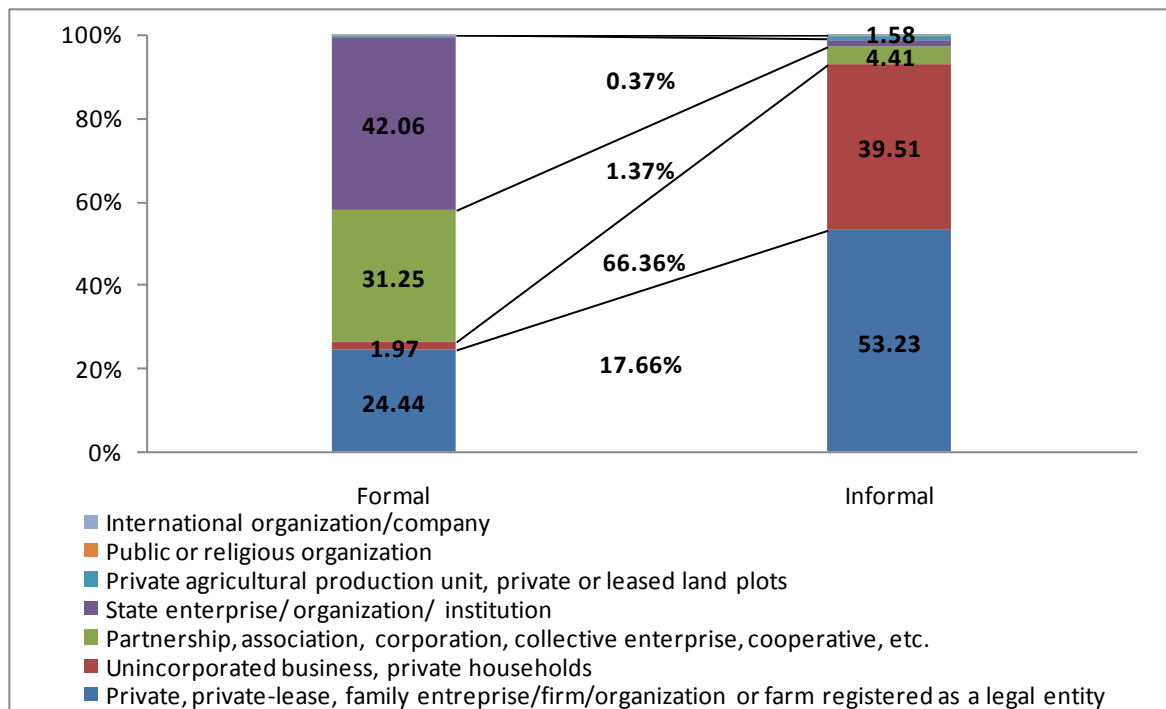
Table 3. The most widespread types of economic activity in informal wage employment*

NACE Rev.1 Code	Sector	Activity	Share in informal wage employment, %
4521	Construction	General construction of buildings and civil engineering works	25.33
5262	Trade and repair	Retail sale via stalls and markets	11.47
5211	Trade and repair	Retail sale in non-specialized stores with food, beverages or tobacco predominating	6.49
111	Agriculture	Growing of cereals and other crops n.e.c.	5.25
9500	Private households with employed persons	Private households with employed persons	2.67
130	Agriculture	Growing of crops combined with farming of animals (mixed farming)	2.6
5530	Hotels and restaurants	Restaurants	2.59
5020	Trade and repair	Maintenance and repair of motor vehicles	1.72
4541	Construction	Plastering	1.69
5242	Trade and repair	Retail sale of clothing	1.58
112	Agriculture	Growing of vegetables, horticultural specialities and nursery products	1.29
4525	Construction	Other construction work involving special trades	1.29
5212	Trade and repair	Other retail sale in non-specialized stores	1.27
6022	Transport and communication	Taxi operation	1.12
6024	Transport and communication	Freight transport by road	1.11
4543	Construction	Floor and wall covering	1.07
6021	Transport and communication	Scheduled passenger land transport	1

Note: * Activities with the share in informal employment of 1% and more.

⁶ It is worth noting that this dichotomy between the formal and informal sector is very tentative because it is based on the answers of respondents about the type of enterprise (i.e. the form of business organization, with seven alternatives presented in Figure 3) but not about its legal status (i.e. whether an enterprises is registered in accordance with national legislation or not). It seems fine for enterprises with corporate forms of business organization which are presumably officially registered business units and, therefore, properly classified by us as formal sector enterprises. However, it should be interpreted with caution in the case of unincorporated business entities and private agricultural production units (classified as informal sector enterprises) as many individual entrepreneurs may have official status and operate on a simplified system of taxation.

Figure 3. Wage employment by type of enterprise and type of employment relationship*



Note: *Figures between two bars stand for informality rates for the corresponding type of enterprise.

As Table 4 shows, the composition of informal wage employment in the informal sector by size of enterprises significantly differs from the formal one. Although micro-enterprises are the main providers of informal jobs in both sectors, they have significantly lower share in the formal sector than in the informal one. Accordingly, larger enterprises play more important role in providing informal employment in the formal sector that might be explained by their higher incidence in this sector (the larger the enterprise the more difficult to conceal its activities from a country's authorities), and therefore, larger number of jobs – both formal and informal – supplied.

Nevertheless, the incidence of informal jobs in formal sector micro-enterprises is almost twice larger than in enterprises with 5 to 10 employees and 10 times larger than in enterprises with 11 to 50 employees (30.45 vs. 15.89 vs. 3.57%). All small enterprises in the formal sector that use informal employment arrangements with hired workers are privately owned enterprises with sole or collective proprietorship. Thus, as one could expect, informal jobs in formal sector enterprises are almost exclusively generated by small privately owned enterprises.

There are also differences between formal and informal sector enterprises in the composition of informal wage employment by economic sector: trade and repair has the greatest share in formal sector enterprises (36.83% of all informal jobs), followed by construction (25.57%) and industry (11.93%). On the other hand, the top three sectors in informal sector enterprises are construction (43.94%), trade and repair (22.29%) and agriculture (13.81%). All other aggregated economic sectors presented in Table 4, except for private households, appear to be more important in providing informal jobs (in relative terms) in formal sector enterprises than in informal ones.

Table 4. Informal wage employment by size of enterprise and economic sector (% of the total): formal vs. informal sector*

Category	Formal sector	Informal sector
Size		
Under 5 employees	39.29	70.96
5-10 employees	31.54	23.00
11-50 employees	21.31	5.05
50+ employees	7.85	0.99
Economic sector		
Agriculture	8.88	13.81
Industry	11.93	6.28
Construction	25.57	43.94
Trade and repair	36.83	22.29
Hotels and restaurants	5.20	1.43
Transport and communication	5.20	2.91
Financial intermediation, real estate and business activities	1.86	0.34
Education	0.40	0.10
Health and social work	0.37	0.15
Municipal and individual services	3.47	2.54
Private households with employed persons	0.28	6.22

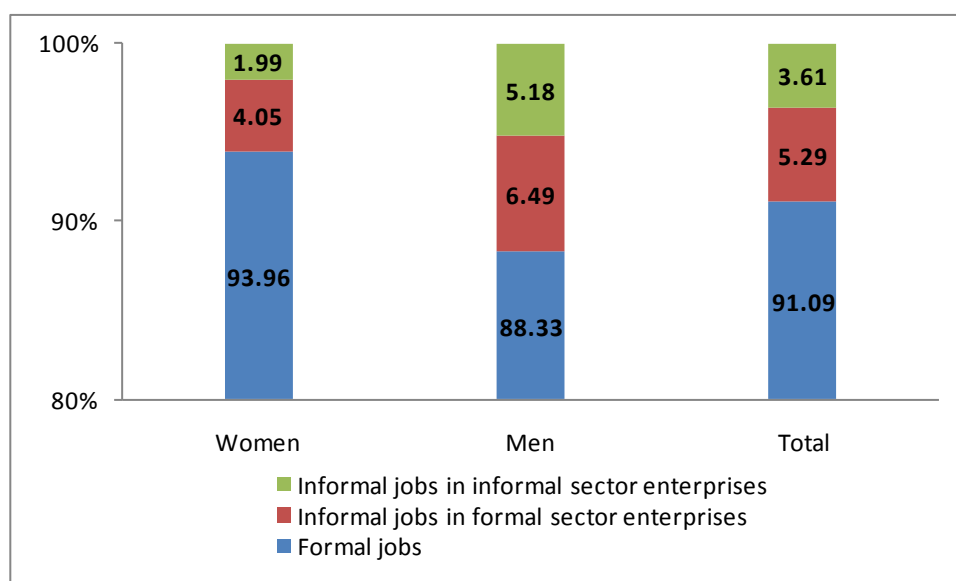
Note: *Enterprises (places of work) are grouped into the formal and informal sector by the author on the basis of information about the type of enterprise where an employee worked in the reference week. According to this classification, the informal sector consists of unincorporated business entities, private households and private agricultural production units. All other types of enterprises (shown in Figure 3) belong to the formal sector. Only employees by oral agreement (i.e. informal workers) are presented here.

3.2.2. Individual characteristics

Gender. As has been already discussed above (see section 3.1), men have higher incidence of informal wage employment than women due to push and pull factors. Of the total jobs engaged in by men, 11.67% are informal, with 6.49% in formal sector enterprises and the rest 5.18% in informal sector enterprises (Figure 4). The percentage of informal employment among jobs held by women is much lower: 4.05% of all jobs are informal jobs in formal sector enterprises, and about 2% of jobs are in informal sector enterprises. So, men prevail over women in informal jobs both in formal and informal sector enterprises, with corresponding shares at 62.41 and 73.03%.

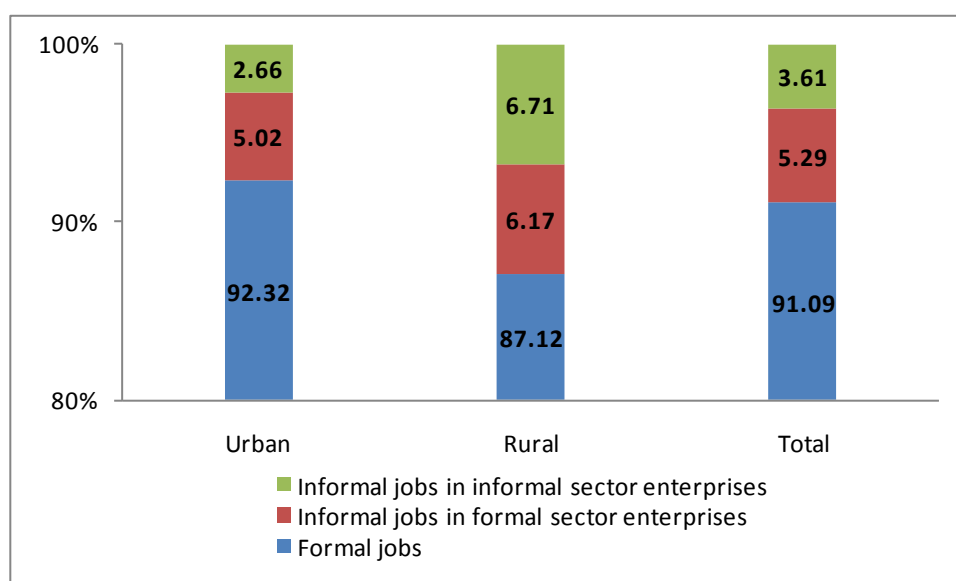
Urban/rural population. There is also a noteworthy difference in the type of jobs held by rural and urban population (Figure 5). 92.32% of urban workers work formally, whereas 7.68% take up informal jobs (about two thirds of them are in formal sector enterprises). Meanwhile, the incidence of informal wage employment among employees from rural areas is significantly higher (12.88%), mainly due to their widespread employment in informal sector enterprises (6.71%).

Figure 4. Wage employment by gender and type of jobs*



Note: * See note to Table 4 for the definition of formal and informal sector enterprises.

Figure 5. Wage employment of urban/rural population by type of jobs*



Note: * See note to Table 4 for definition of formal and informal sector enterprises.

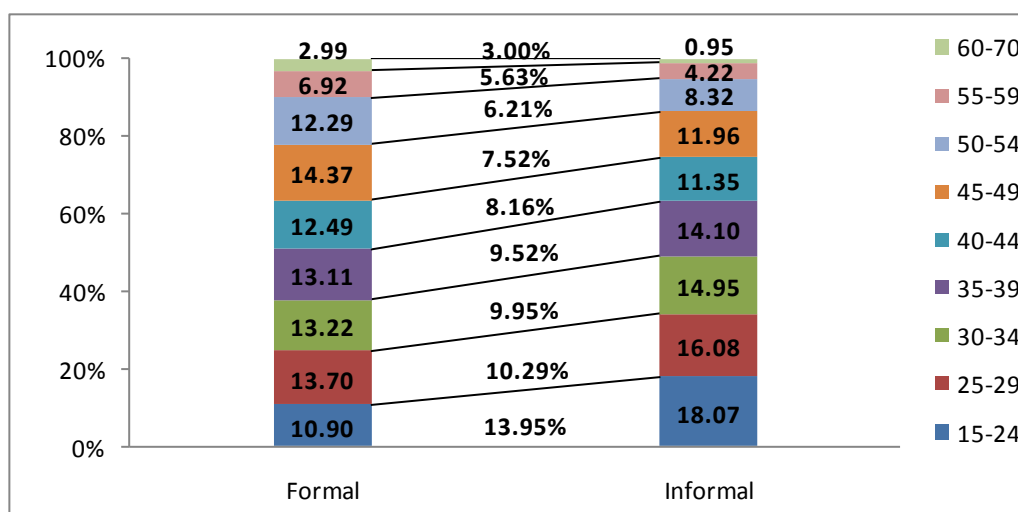
Another striking difference between rural and urban population employed by oral agreement is in the place of their work: the share of rural informal employees working in the same settlement where they live is 34.4 percentage points smaller than among urban employees (56.82 vs. 91.23%). Therefore, many rural residents who cannot find a suitable job in their villages are ready to take up any job outside the home place, including informal one. According to our estimations, each eighth job of rural employees working outside their villages is informal.

Finally, significant differences are also observed in terms of sectoral distribution of informal wage employment. The share of rural residents in informal wage employment by economic sectors varies from about 5.8% in financial intermediation, real estate and business activities to 82.3% in agriculture, with prevalence of rural population only in education and agriculture.

The major sector providing informal jobs for rural residents is construction (37.36% of all jobs held by rural informal workers), followed by agriculture (26.25%) and trade and repair (14.22%). Meanwhile, the latter sector provides about 40% of all informal jobs for urban residents, whereas construction ranks the second (30.79%).

Age. Unlike total employment in the informal sector (including self-employed and unpaid family workers) with the highest incidence observed among the oldest persons (aged 60-70 years), there is a strong downward trend in the incidence of informal wage employment with age, from about 14% for the youngest (15-24 years) to 3% for the oldest (60-70 years). Figure 6 reveals that young persons are disproportionately represented in informal jobs. This feature is observed in all age groups up to the age of 40 years, though to a lesser extent than among the youngest. Thus, Ukrainian youth has not only high probability of being unemployed⁷ but also high risks of starting employment history from working informally, i.e. without written labor contract or agreement. For many young workers informal employment can act like a trap which offers few prospects to improve careers in the future.

Figure 6. Wage employment by age group and type of employment relationship*



Note: *Figures between two bars stand for informality rates for the corresponding age group.

Taking into account that young persons in informal jobs are most likely low-productivity workers, the increased wedge between employer costs and employee wages because of enforced formalization of informal jobs will make many young people too expensive for employers. As a result, government actions aimed at fighting informal employment might cause a decrease in youth employment thereby aggravating the problem of youth unemployment.

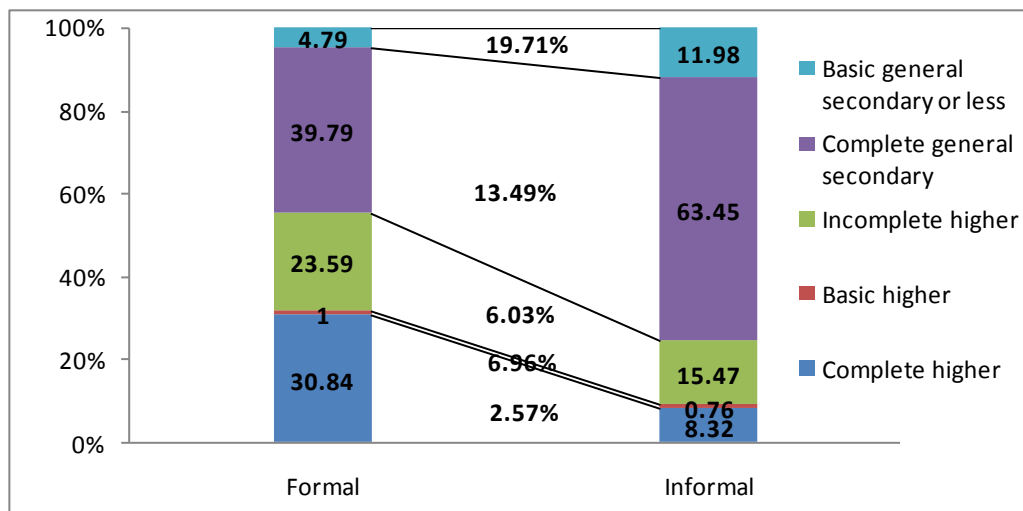
Education. As in the case of total employment in the informal sector, higher educational attainment is associated with lower incidence of informal wage employment. However, wage employment is characterised by significantly lower informality rates in all education groups than total employment in the informal sector due to exclusion of persons engaged in subsistence farming and small-scale informal activities. For example, of all jobs held by persons with complete higher education about 2.6% are informal (as opposed to 5.5% in

⁷ In 2009, the unemployment rate for the youngest (15-24 years) was 17.8%, compared to the national average of 8.8% (persons aged 15-70 years).

total employment in the informal sector). The highest incidence of informal wage employment among persons without basic general secondary education is less than 50%.

As Figure 7 shows, better educated persons with professional education dominate in formal jobs while workers with general education or no education are overrepresented in informal jobs. Hence, persons without professional education are more vulnerable to informal employment but this quasi-employment in the informal sector makes them less prone to unemployment as opposed to better educated persons with incomplete or basic higher education. Although university graduates have the lowest probability of being employed in informal jobs, those of them who are not able to find formal employment are likely to experience a large wage penalty for working informally. Lehmann and Pignatti (2007) found on the basis of the ULMS data that while there is a large wage premium for university graduates in general, this premium is completely wiped out for those who are forced to work in informal jobs even though they have a university education.

Figure 7. Wage employment by the level of education and type of employment relationship*



Note: Figures between two bars stand for informality rates for the corresponding level of education.

Occupation. The most common occupations in informal wage employment belong to the following four occupational groups: service workers and shop and market sales (27.89% of all informal jobs), craft and related workers (27.57%), elementary occupations (27.27%), and plant and machine operators and assemblers (9.83%). This is in line with the sectoral structure of informal employment discussed above. These occupational groups have also the highest incidence of informal employment (Table 5). On the other hand, a person working as a professional, senior official, manager, technician or a clerk is most likely to be formally employed. The group of skilled agricultural and fishery workers stands apart: the incidence of informal employment is relatively high (about 13%) whereas the share of this occupational group in informal wage employment is about 1.5% and the share in formal wage employment is even less (about 1%). This implies that skilled agricultural and fishery workers are currently in a very low demand in Ukraine, irrespective of the status of employment relationship.

Table 5. Wage employment by occupational group and type of employment relationship*

Occupational group	Informality rate, %	Share of group in formal wage employment, %	Share of group in informal wage employment, %
Legislators, senior officials and managers	0.85	8.9	0.78
Professionals	0.72	18.09	1.33
Technicians and associate professionals	1.76	15.57	2.84
Clerks	1.97	4.67	0.95
Service workers and shop and market sales	16.08	14.34	27.89
Skilled agricultural and fishery workers	13.04	1.01	1.54
Craft and related workers	17.32	12.97	27.57
Plant and machine operators and assemblers	6.22	14.6	9.83
Elementary occupations	21.41	9.86	27.27

Note: *Information about occupation is based on the answers of respondents about their job position, occupation or description of activity at their main job. Then these occupations are coded according to the National classification of professions (based on ISCO-88) at 4 digits. Aggregation into 9 larger sectors is made by the author.

Table 6 provides information about the most widespread occupations in informal wage employment for both genders. However, there are significant differences in popular occupations between women and men due to observed occupational gender segregation in Ukraine (Kupets, 2010). Women employed by oral agreement predominantly work at low-paid jobs such as shop, stall and market salespersons (about 54% of all women employed in informal jobs), restaurant services workers (6.79%), farm-hands and laborers (5.14%), domestic and related helpers and cleaners (5.13%), and sewing-machine operators (3.70%). Occupations of men in informal jobs are more diversified, with the highest share of manufacturing laborers at 13.41%. The other most popular male occupations are car, taxi and van drivers (7.33%), building frame and related trades workers not elsewhere classified (6.79%), farm-hands and laborers (6.69%), bricklayers and stonemasons (6.50%), plasterers (5.82%), loaders (4.74%), painters and related workers (3.54%).

Hours of work. The average duration of working week (hours actually worked) among all informal workers was recorded at 40.6 hours. This is 2.8 hours more than the average number of hours actually worked by formal workers. Meanwhile, if we distinguish between informal workers working in seemingly informal sector enterprises (production units) and those working informally in formal sector enterprises using the definition introduced above, it appears that workers in formal sector enterprises tend to work more than their counterparts from the informal sector (Table 7). The same pattern is observed when hours usually worked are compared.

Comparing the composition of jobs by hours worked in three groups (Table 7), we can see that the proportion of employees working more than the statutory duration of working week in Ukraine (40 hours) is almost 3 times larger in informal jobs compared to the formal ones. In fact, roughly each third worker in informal jobs (either in formal or informal sector enterprises) work more than 40 hours. Some sectors such as transport and communication, hotels and restaurants, construction, trade and repair have even larger proportion of informal employees working over 40 hours per week.

Table 6. The most widespread occupations in informal wage employment*

ISCO Code	Occupational group	Occupation	Share in informal wage employment, %
5220	Service workers and shop and market sales	Shop salespersons	12.02
5230	Service workers and shop and market sales	Stall and market salespersons	10.12
9322	Elementary occupations	Manufacturing laborers	9.83
9211	Elementary occupations	Farm-hands and laborers	6.17
8322	Plant and machine operators and assemblers	Car, taxi and van drivers	4.96
7129	Craft and related workers	Building frame and related trades workers not elsewhere classified	4.58
7122	Craft and related workers	Bricklayers and stonemasons	4.41
7133	Craft and related workers	Plasterers	4.15
9333	Elementary occupations	Loaders	3.29
7141	Craft and related workers	Painters and related workers	2.81
9312	Elementary occupations	Construction and maintenance laborers: roads, dams and similar constructions	1.78
7212	Craft and related workers	Welders and flame cutters	1.58
5123	Service workers and shop and market sales	Waiters, waitresses and bartenders	1.45
7132	Craft and related workers	Floor layers and tile setters	1.45
5169	Service workers and shop and market sales	Protective services workers not elsewhere classified	1.4
9132	Elementary occupations	Helpers and cleaners in offices, hotels and other establishments	1.4
8331	Plant and machine operators and assemblers	Motorised farm and forestry plant operators	1.36
5122	Service workers and shop and market sales	Cooks	1.33
7231	Craft and related workers	Motor vehicle mechanics and fitters	1.32
7422	Craft and related workers	Carpenters	1.31
8263	Plant and machine operators and assemblers	Sewing-machine operators	1.28
9311	Elementary occupations	Mining and quarrying laborers	1.26

Note: * Occupations with the share in informal employment of 1% and more.

Table 7. Hours worked during a reference week by type of jobs*

	Formal jobs	Informal jobs in formal sector enterprises	Informal jobs in informal sector enterprises	Total
Hours usually worked				
Less than 20 hours	1.73	0.85	2.31	1.71
20-29 hours	2.66	2.97	5.53	2.78
30-39 hours	6.32	6.38	9.85	6.45
40 hours	80.21	58.58	51.18	78
More than 40 hours	9.08	31.23	31.12	11.06
Average duration, hours	39.7	42.3	40.9	40.0
Hours actually worked				
Less than 20 hours	6.03	3.63	4.73	5.86
20-29 hours	3.43	4.09	6.52	3.58
30-39 hours	10.06	7.63	10.94	9.96
40 hours	71.02	54.11	47.47	69.26
More than 40 hours	9.46	30.55	30.34	11.34
Average duration, hours	37.8	41.2	39.8	38.3

Note: * See note to Table 4 for definition of formal and informal sector enterprises.

At the same time, workers holding informal jobs in informal sector enterprises are also more prone to underemployment in terms of usual working hours, and this most often takes places in agriculture, municipal and individual services, and in private households with employed persons.

These differences in working hours between formal and informal workers imply that the latter ones seem to be more flexible. This suggests that informal arrangements with workers might be used by employers as a way to gain flexibility in view of rigid labor regulations regarding working hours (as well as hiring and firing procedures). Although Ukrainian employment protection legislation is known to be rigid compared to many other transition economies, and Ukraine is ranked 83 overall for Employing Workers component according to the *World Bank Doing Business 2010 Report* (WB, 2009a), the rigidity of working hours index in Ukraine appears to be the same as in Armenia, Azerbaijan, Georgia, Kazakhstan and Kyrgyz Republic which are ranked higher in terms of the ease of employing workers (see Table 8), and lower than in many Western European countries such as Belgium, France, Finland, Germany, Greece, Italy, Portugal and Spain.

Furthermore, as has been shown in previous studies in Ukraine (e.g. WB, 2005 and 2009b), labor regulations are viewed by Ukrainian employers as considerably less important obstacle to firms' operation and growth than in other countries of the ECA region due to generally weak enforcement of labor regulations and the existence of more important obstacles such as tax rates, cost and access to financing, macroeconomic and political instability, corruption, lack of worker skills, etc.

Table 8. Rigidity of hours index and the ease of employing workers in the former Soviet Union republics in 2009

Country	Rigidity of hours index (0-100)	Ease of employing workers (rank – out of 183 countries)
Armenia	20	43
Azerbaijan	20	33
Belarus	13	58
Estonia	60	161
Georgia	20	9
Kazakhstan	20	38
Kyrgyz Republic	20	47
Latvia	40	128
Lithuania	60	119
Moldova	40	141
Russia	40	109
Tajikistan	73	143
Ukraine	20	83
Uzbekistan	33	95

Source: Doing Business 2010 Report (WB, 2009a).

4. Expected fiscal gains from formalizing informal workers in Ukraine

In order to estimate the expected fiscal gains from the formalization of employees we assume several scenarios. The basic assumption in all scenarios is that firms will declare *all* workers in their enterprises at least at the statutory minimum wage after formalization. This is most likely too optimistic.

Currently, due to very limited number of inspectors and a wide range of responsibilities roughly 1.2% of employers could be captured by inspection during a year, or the probability of inspection in each enterprise is once in 20 years. So the effectiveness of labor inspections in terms of the number of undeclared situations identified and the value of sanctions imposed seems to be fairly low. In addition, it should be taken into account that due to existing differences in productivity of formal and informal workers and high cost of formality (including personal income tax and social contribution burden, fringe benefits, inflexibility in working hours and hiring/ firing), not all undeclared work (informal jobs) will be automatically converted into the declared realm. This situation refers to undeclared work in formal sector enterprises. Likewise, given that one of the major motives for purchasing wholly undeclared goods or services (produced by informal sector enterprises or production units) by consumers is lower prices, demand for such goods and services would decline in the case of increased prices till the market level. For example, it has been found in Denmark, that the purchasers of undeclared work “would prefer to resort to do-it-yourself activities (34%) or simply not consume the services (30%) rather than pay the official formal price” (Williams and Renooy, 2008, p. 25). Given this, we assume in one of our scenarios that only some fraction of undeclared work would be converted into formal jobs.

Finally, employers might choose to declare all workers but only part-time, i.e. they would pay official wage for less working hours than actually worked. For lack of reliable data, we do not include this last issue in our estimations below.

A second basic assumption in all scenarios is that there are no dynamic gains in terms of productivity, for example, arising from formalization. In due time, and if barriers to formalization are removed, these dynamic gains could lead to increased fiscal gains.

Summary of assumptions used in all scenarios:

- 1) workers are assumed to work the same number of hours as in a reference week (usual working hours), duration of working week is 5 days;
- 2) the basis for calculation of social security contributions and PIT payments is gross monthly income which is assumed to be equal to the minimum monthly wage effective during 1 January-1 April, 2011 (941 UAH) for full-time workers (working 40 hours or more during a reference week) and an hourly minimum wage (5.66 UAH) multiplied by the number of hours usually worked during a reference week and 4.16 (the average number of working days in a month divided by 5)⁸ for part-time workers;
- 3) since the monthly income of all former informal workers considered here is less than 1320 UAH (monthly subsistence minimum for working-able persons which is equal to the minimum wage multiplied by 1.4 and rounded to the nearest 10 UAH), they are eligible for a tax social benefit which is equal to 50% of the monthly subsistence minimum for working-able persons, i.e. 470.5 UAH. The special cases of individuals with 2 children or more, single mothers, disabled, war veterans, etc. are not considered;
- 4) the PIT rate is 15% of the taxable income (gross wage minus social insurance contribution from employee's side minus tax social benefit);
- 5) employees refer to the main category (not disabled, pensioners, etc.), so the unified social insurance contribution rate from employer's side is 3.6%;

Table 9. Unified social contribution rates from employer's side depending on the economic sector

Economic sector	Category of occupational hazard*	Unified social insurance contribution rate, %*
Construction	52	38.52
Trade and repair	5	36.8
Agriculture	22	37.19
Industry	22 (14-66)	37.19 (36.95-42.72)
Transport and communication	33 (10-33)	37.66 (36.88-37.66)
Hotels and restaurants	5	36.8
Municipal and individual services	8	36.85
Private households with employed persons	8	36.85
Financial intermediation, real estate and business activities	1	36.76
Education	3	36.78
Health and social work	7	36.83

Source: Resolution of the Cabinet of Ministers of Ukraine N1423 (13.09.2000) about classification of economic activities by categories of occupational hazard; The Law of Ukraine N2464-VI (08.07.2010) On collection and accounting of the unified social insurance contribution.

⁸ The average number of working days during a month in 2011 (20.8) is calculated on the basis of the letter of the Ministry of Labor and Social Policy of Ukraine N9111/0/14-10/13 (25.08.2010) On calculation of the normative duration of working time in 2011.

Note: *For industry and transport the most frequent category and the corresponding rate are used, while the range of categories and rates are shown in the brackets for information.

- 6) in general, the unified social insurance contribution rate from employer's side varies from 36.76% to 49.70 % depending on the category of occupational hazard (the total number of categories is 67). Taking into account our findings on sectoral composition of informal wage employment presented in Tables 2 and 3, we limit the number of categories to the most widespread activities in our sample of informal wage earners (Table 9);
- 7) the total number of informal jobs for employees (equal to the number of employees employed by oral agreement) in 2011 is roughly the same as in 2009 and is equal to 1,458,913 jobs. Of them, 866,848 jobs are in formal sector enterprises, i.e. production units of all types except for unincorporated business entities (private entrepreneurs), private households and private agricultural production units.

Additional assumptions by scenarios:

Scenario 1 – Optimistic: All informal jobs (both in formal and informal sector enterprises) are preserved and converted into the formal ones as a result of the government policy. This scenario yields the *theoretical maximum fiscal gain*.

Scenario 2 – Semioptimistic: All informal jobs are preserved and converted into the formal ones, but government policy can effectively shape employment only in formal sector enterprises, whereas purely informal employment (with purely informal production and no requirement/ feasible procedure to declare employment or earnings) remains largely unchanged.

Scenario 3 – Pessimistic: Only two thirds of undeclared work in formal sector enterprises are converted into the legitimate realm, while the rest jobs either disappear at all or remain undeclared. This is a *more realistic, yet still theoretical (over)estimation of the fiscal gain*.

According to our estimations of fiscal gains (Table 10), the theoretical maximum total fiscal gains are about 627.5 million UAH (first scenario). The third scenario – the most conservative of our three scenarios – estimates fiscal gains of possibly up to 251.4 million UAH. The actual fiscal gain is certainly even lower than what this third scenario suggests, however, if in fact more informal jobs are destroyed or remain undeclared than we assume here (one third). Furthermore, these gains of deterrence measures should be reduced by the direct costs of these measures (e.g. wage bill of extra labor inspectors hired to increase the probability of detection and punishment) minus the sum of penalties imposed, and indirect losses if heavy sanctions lead to closure of some companies with the loss of their regular and irregular jobs and all tax collections.

If we compare our estimates with the projected Pension Fund deficit in 2011 at 17.7 billion UAH (which is a very optimistic number compared to the estimated deficit in 2010 at 34.4 billion UAH) or with the current deficit of the Social Insurance Temporary Disability Fund at 750 million UAH (of which about 400-450 million UAH are arrears of sick leave allowances), it becomes evident that deterrence-based measures aimed at formalizing undeclared work are not likely to significantly improve the sad state of Ukraine's public finances. Given recent tax reform and worsening of social situation in the country, the effectiveness of these measures in reducing the economic incentives for engaging in undeclared work and in changing attitudes is also questionable.

Table 10. Estimated fiscal gains from formalizing informal workers in Ukraine*

	Indicator	Scenario		
		1	2	3
1	Number of jobs converted to the formal realm	1,458,913	866,848	577,899
2	Official average monthly wage, UAH (min – max)	900.31 (70.64 –941)	911.57 (117.73 –941)	911.57 (117.73 –941)
3a	Total monthly wage bill, UAH	1,313,470,679	790,189,000	526,792,667
3b	Share of the average monthly wage bill in 2011 according to projections in the Law on State Budget, %	4.03	2.43	1.62
4a	PIT collections (with tax social benefit received by all employees), UAH**	87,644,781	53,325,940	35,550,626
4b	Share of the average monthly revenues from PIT in 2011 according to projections in the Law on State Budget, %	1.79	1.09	0.73
5	Unified social insurance contribution, UAH	539,821,373	323,789,000	215,859,333
4a+ 5	Total gains (additional PIT collections and unified social insurance contribution), UAH	627,466,154	377,114,940	251,409,960

Source: Author's calculation based on LFS-2009 data and assumptions presented above.

Notes: *Costs of policy measures (e.g. wage bill of extra labor inspectors hired to increase the probability of detection and punishment) and collections from penalties are not taken into account. **If monthly income is less than tax social benefit (470.5 UAH), PIT collection is assumed to be zero.

Although here the analysis has focused on the immediate fiscal gains that could be obtained from formalization, this is only a partial picture. We have ignored the significant dynamic and long-term effects associated with formalization. In particular, formalization can lead to higher productivity (through increased access to credit, for example), increased investment in human capital (both by individuals and by firms), more innovation and workers that are better protected against risks (see note on policies to reduce informal employment).

5. Summary of findings and conclusions

The main findings of this study are the following:

- Roughly each third person employed in the informal sector is an employee by oral agreement, i.e. without a written labor contract with his/her employer and, therefore, is not subject to employment protection legislation, income taxation and social insurance. The number of such informal workers in 2009 was 1,458,913 persons.
- The smaller the size of an enterprise (production unit) in terms of employment, the higher is the incidence of undeclared work. 52% of all informal employees work in micro-enterprises (with less than five employees), and another 28% work in establishments with 5 to 10 employees.
- The highest incidence of undeclared work is in Chernivtsi oblast (32.3%), while the lowest one is in Sevastopol City (4.3%). At the same time, the leading regions in terms of the

number of informal employees are Donetsk oblast (10.2% of all informal employees in Ukraine), Odesa oblast (8.0%) and the Crimean Autonomous Republic (6.4%).

- The major providers of jobs without written employment agreement or contract are construction sector (33% of all informal jobs), retail trade and repair (30.9%) and agriculture (10.9%). Construction is also the leading sector in terms of the incidence of undeclared work, which is at a strikingly high level of 39.4%, meaning that four out of 10 people employed in the construction sector work unofficially. Almost one in four undeclared jobs in Ukraine is undertaken in general construction of buildings and civil engineering works. The other most popular activities in terms of informal wage employment are retail sale via stalls and markets or in non-specialized stores with food, beverages or tobacco, growing of cereals and mixed farming, domestic services for private households, and restaurants.
- Formal sector enterprises (defined by us as the enterprises of all organization types except for unincorporated business entities, private households and private agricultural production units) account for 59.42% of all undeclared jobs (equivalent to about 866.8 thousand jobs). Informal jobs in these enterprises are almost exclusively generated by small privately owned enterprises.
- Men prevail over women in informal jobs both in formal and informal sector enterprises, with corresponding shares at 62.41 and 73.03%. The most popular male occupations are manufacturing laborers, car, taxi and van drivers, building trades workers (including bricklayers and stonemasons, plasterers, painters and related workers), loaders, farm-hands and laborers. Women employed by oral agreement predominantly work at low-paid jobs such as shop, stall and market salespersons, restaurant services workers, farm-hands and laborers, domestic and related helpers and cleaners, and sewing-machine operators.
- The incidence of informal wage employment among employees from rural areas is significantly higher (12.88%) than among urban workers (7.68%), and this is not taking into account all subsistence farmers (i.e. the persons employed in their private agricultural production units) and their unpaid helpers. Furthermore, the bulk of rural informal employees (43.2%) work outside the settlements where they live, predominantly in construction (53.6%), retail trade (18%) and industry (10.3%, mainly in food industry, manufacture of wood products and furniture).
- Young persons (15-24 years) are disproportionately represented in undeclared jobs. The newcomers on the labor market have high probability of starting employment history from working without written labor contract or agreement (the incidence of informal wage employment is about 14%).
- Undeclared jobs especially in informal sector enterprises are more flexible in terms of working hours: the proportion of employees working more than the statutory duration of working week in Ukraine (40 hours) is almost 3 times larger in informal jobs compared to the formal ones, and the share of employees working less than 40 hours is also larger.
- Under our assumptions, the maximum fiscal gains (unified social insurance contribution and PIT collections) from deterrence-based measures aimed at detection and punishment of employers engaged in informal work arrangements with their employees

are estimated at about 627.5 million UAH (if all undeclared jobs, both in formal and informal sector enterprises, are converted into the formal realm). The net gain – when the direct costs of the measures (e.g. wage bill of extra labor inspectors hired to increase the probability of detection and punishment) minus the sum of penalties imposed, and indirect losses (if heavy sanctions lead to closure of some companies with the loss of their regular and irregular jobs and all tax collections) are deducted from estimated fiscal gains– will be even smaller. These estimates, however, do not account for the potential gains of increased productivity of formal firms and the associated dynamic and long-term effects of these gains, including increased incentives to invest in human capital and increased innovation.

- In order to facilitate evidence-based policymaking process and enable comprehensive evaluation of specific measures in terms of their effectiveness in tackling undeclared work, it is necessary to increase the quality of labor-related statistical resources (the transition to labor approach in measuring informal employment and inclusion of new questions about the coverage of workers by social insurance and their wages in the LFS questionnaire are crucial), improve their transparency and timely dissemination of micro-datasets to researchers.

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Annex 1. Informality rate and sectoral composition of informal wage employment by regions of employment*

Region	Informality rate, %	Informal wage employment by economic sector, % of the total										
		Agriculture	Industry	Construction	Trade and repair	Hotels and restaurants	Transport and communication	Financial intermediation, real estate and business activities	Education	Health and social work	Municipal and individual services	Private households
Crimean AR	13.4	8.7	5.4	41.1	29.2	2.8	4.6	1.4	0.7	1.8	1.8	2.6
Vinnitsia	7.9	14.7	13.4	30.3	30.3	1.5	4.5	2.0	0.9	0.4	2.0	0.0
Volyn	9.7	21.0	8.8	29.9	31.3	2.4	1.7	0.0	1.0	1.2	2.7	0.0
Dnipropetrovsk	5.9	12.2	8.8	27.7	37.5	3.2	3.0	1.7	0.3	0.0	3.1	2.5
Donetsk	8.1	6.6	4.4	32.8	44.0	3.6	4.6	0.0	0.0	0.0	1.3	2.8
Zhytomyr	3.8	2.9	16.0	35.7	33.7	3.3	5.1	0.0	0.0	0.0	1.2	2.1
Zakarpattia	18.6	17.8	8.6	36.4	11.9	1.3	3.9	0.7	0.4	0.0	3.0	16.0
Zaporizzhia	7.2	9.8	6.7	25.5	43.5	6.4	3.1	0.0	0.2	0.2	4.6	0.0
Ivano-Frankivsk	17.0	4.4	7.4	53.8	22.0	3.9	3.1	1.3	0.0	0.0	3.2	1.0
Kyiv oblast	6.7	8.6	18.9	42.5	18.9	1.3	6.6	1.5	0.0	0.0	1.1	0.7
Kirovohrad	7.1	18.2	7.1	20.7	36.3	3.0	7.9	2.0	0.0	0.0	4.2	0.7
Luhansk	5.0	8.7	8.1	30.6	31.4	3.0	7.2	1.8	0.0	0.5	5.9	2.6
Lviv	8.4	0.1	15.8	46.4	30.4	2.5	1.1	1.7	0.0	0.0	1.2	0.8
Mykolaiv	16.1	35.6	4.2	20.4	25.6	6.6	2.6	0.3	0.0	0.5	4.0	0.3
Odesa	13.3	16.6	7.6	14.9	37.4	6.7	6.2	1.2	1.2	0.2	4.7	3.3
Poltava	6.3	11.3	16.5	18.9	42.0	0.2	3.6	0.6	0.4	0.1	6.4	0.0
Rivne	8.9	10.8	10.8	36.9	33.3	2.8	3.1	0.0	0.4	0.0	1.5	0.7
Sumy	7.3	6.3	12.9	31.1	34.6	3.2	6.6	0.6	0.0	0.0	4.4	0.3
Ternopil	12.5	4.2	16.9	49.3	17.5	4.7	1.8	0.8	0.0	0.1	1.9	2.9
Kharkiv	8.1	3.5	17.5	27.4	40.0	2.6	3.1	1.6	0.0	0.4	3.5	0.4
Kherson	17.4	24.5	10.9	25.1	21.1	4.6	8.7	2.6	0.2	0.3	1.2	0.9

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		Agriculture	Industry	Construction	Trade and repair	Hotels and restaurants	Transport and communication	Financial intermediation, real estate and business activities	Education	Health and social work	Municipal and individual services	Private households
Khmelnysky	9.9	7.4	15.2	31.7	32.0	4.9	5.1	0.8	0.3	0.0	2.7	0.0
Cherkasy	10.8	5.6	5.7	35.0	34.3	6.9	4.0	0.0	0.6	0.0	6.5	1.3
Chernivtsi	32.3	13.0	14.1	45.6	18.5	1.8	2.7	0.1	0.1	0.7	1.7	1.8
Chernihiv	5.1	16.0	24.6	9.5	34.3	1.6	5.1	1.0	0.0	0.0	7.9	0.0
Kyiv City	4.6	0.6	2.2	45.6	19.8	4.7	5.6	6.1	0.0	0.0	4.8	10.9
Sevastopol City	4.3	1.9	5.5	40.1	38.4	5.0	1.5	5.6	0.0	0.0	2.2	0.0

Note: Region of employment is defined by the author based on the answers of employees about their place of work compared to the place of residence.