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Source: *Society and Economy*, Vol. 37, Supplement (November 2015), pp. 11-28

Published by: Akadémiai Kiadó

Stable URL: <https://www.jstor.org/stable/43773862>

Accessed: 31-01-2022 18:49 UTC

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TAX EVASION AND THE SHADOW ECONOMY IN HUNGARY

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The fight against the shadow economy and tax evasion is among priority policy objectives in most developed countries. In addition to causing significant budget revenue shortfalls, the shadow economy and tax evasion distort the quality of statistics and market competition. Based on the theoretical and empirical literature, this paper presents the underlying reasons behind the shadow economy and estimates on the size of the shadow economy in Hungary. Furthermore, it draws conclusions on the whitening effects of recent policy measures, based on the most recent statistics of the National Labour Office and the retail sales statistics.

Keywords: tax evasion, shadow economy

JEL-codes: H26, O17

1. INTRODUCTION

The existence of an underground economy is a by-product of the functioning of the economy which has always been present ever since the term could be used, i.e. since we have distinguished legal and illegal, registered and unregistered activities, and will probably stay around. Nevertheless, making historical estimates of its size is impossible and probably pointless, too, as the various economic arrangements cause the results to be incomparable, but there is one aspect where the role of the underground economy is increasing. This impact is caused by the fact that more and more statistics are compiled to cover the various segments of economy and society, which underlie decisions that are more complex than ever, at least in the history of competition and market-based economies.

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For analysts and decision-makers, a particularly disadvantageous consequence of the underground economy is that it substantially distorts our statistics, causing them to present only an inaccurate view of the functioning of economy, including certain essential areas. The most widely accepted indicator of economic performance, GDP, too, contains estimates on underground economy, which represented roughly 15 percent of GDP in the 2000s. This ratio is quite significant, especially if we bear in mind that gross domestic product is used in many essential ratios (debt ratio, balance of payments to GDP, etc.) whose accuracy thus depends on the size of underground economy and estimates relating thereto. But undeclared activities make economic performance measurement difficult in other areas as well. A strongly impacted area is the labour market where both employment and income statistics are considerably distorted by undeclared work and undeclared income. For this reason, getting an accurate picture of the evolution of employment is difficult, especially on people working the odd jobs at the periphery of the labour market.

It is a legitimate expectation that policy decisions should be adopted in knowledge of and based on relevant data, but underground economy largely hinders this. This impact can be felt particularly in the cases related to the tax and subsidy system when available official figures inaccurately reflect the real situation such as wage distribution. In Hungary, the ratio of declared minimum wage earners was quite high in the 2000s compared to other countries with similar income, while experts estimated that roughly half of the minimum wage earners also had other sources of labour income (Elek et al. 2009, 2012). To keep government revenue at appropriate levels, this resulted in tax rates which placed undue burden on people who were legally employed, which, in turn, increased the size of the underground economy even more. Often breaking this vicious cycle is possible only through measures which knowingly take into account the existence and distortive effect of underground economy and optimally are targeted at curtailing it; such was the simplification of the tax system and the introduction of the flat rate personal income tax system. Besides distorting the statistics which underlie the decisions, underground economy can also influence the impact of the measures and can therefore divert the results from the original purpose.

Finally, one of the most tangible effects of shadow economy appears in budget, mostly on the revenue side, but to a minor extent also on the expenditure side. Tax evasion decreases the funds for providing public goods, the sources for state aid. These subsidies are also impacted by doing work while being registered as unemployed, unjustified disability pension or unfounded utilization of other aids.

The existence, size and exploration of shadow economy are therefore relevant also for economic policy; for this reason, this paper reviews the parts of literature

on this matter which are dedicated to the causes and the estimated size of underground economy and we will also present a few processes which reflected or affected the size of shadow economy in Hungary in the last years.

2. WHAT DOES SHADOW ECONOMY MEAN AND WHAT ARE ITS CAUSES?

The starting point for most studies measuring and analyzing shadow economy is how the concept of shadow economy can be defined. Various terms are used for designating the phenomenon, which are practically synonymous; this paper employs mostly the terms shadow economy and underground economy. In spite of the diversity of names, there is a relative consensus in literature on how shadow economy is defined. According to the generally accepted definition, it includes every unregistered activity which contributes to the production of gross domestic product. In other terms, economic activities and income derived from them are considered as part of the shadow economy, which are not registered by authorities and in some form avoid governmental regulation or remain hidden from the state for the purposes of taxation (Schneider 2012; Laczkó 2009).

This definition is very broad and includes illegal activities (such as drug trade and human trafficking) and to some extent even household work when the productive activity is for the household's own consumption. Therefore the literature often uses a narrower definition which restricts the definition to legal activities and regards as shadow economy the cases where the motivation for hiding the activity from authorities is:

- tax evasion;
- non-compliance with certain regulations of the labour market such as minimum wage, the number of maximum working hours or work safety requirements;
- avoidance of other administrative requirements.

In this study, the term shadow economy reflects this narrower definition and our aim is to explore the causes for tax evasion. Albeit shadow economy and tax evasion are not synonyms, the activity performed as part of the shadow economy goes hand in hand with tax evasion in most cases, therefore the factors impacting tax evasion will definitely affect shadow economy as well.

According to the classic approach, the extent of tax evasion depends on the relative gain derived from the evasion i.e. on the extent to which the income saved by evasion can augment the expected utility of the individual (Allingham – Sandmo 1972; Slemrod – Yitzhaki 2000). According to this approach, the taxpayer makes a decision in an unpredictable environment on what portion of his or her income to hide, considering the probability of a tax audit, size of the penalties,

tax rate and their own risk appetite. A risk-neutral taxpayer has an interest in tax evasion if the expected penalty (which depends on the probability of expected discovery and penalty) is smaller than the expected amount saved by evasion (which hinges on the probability of avoiding penalty and the amount saved). Accordingly, a higher penalty rate and probability of tax audits will clearly curb the extent of tax evasion. At the same time, the classic models do not fully explain how tax rate influences tax evasion, because, albeit tax rate hikes in these models do increase the amount saved, they also involve higher penalty as the higher amount hidden from taxation entails higher penalty.

Of course, after the classic approach the literature has broadened into various directions and other factors were added to the list of causes besides the probability of tax audits and penalty rate. Here we are going to highlight those which can be relevant for understanding the tax evasion tendencies in Hungary:

- Albeit the classic models haven't reached a clear conclusion in terms of the impact of tax rates, the subsequent studies agree in that the high taxes and contributions levied on economy are among the top reasons for tax evasion.
- An interesting direction pursued by theoretical literature in connection with involvement in shadow economy is related to the extent of governmental regulation. Accordingly, increased governmental regulation (such as labour market regulations, labour restrictions on immigrants) can encourage involvement in shadow economy by increasing the costs of operating in the formal sector rather than in the shadow economy.
- On the other hand, equally relevant is the simplicity of the tax system: simpler tax systems are associated with lower auxiliary costs of tax payment (declaring, interpretation of regulations) which can reduce the relative gain from involvement in tax evasion; but they also diminish the costs of tax audits which, paired with a given tax audit expenditure, can increase the probability of discovery.
- An important factor is the efficiency of the state's operation as perceived by the taxpayers. Low-quality public services and high corruption deteriorate the expected usefulness of taxes paid, thereby intensifying the motivation for tax evasion. Besides the higher general moral satisfaction of tax payment associated with a more efficient operation of the state, the indirect benefits of involvement in formal economy multiply as well (e.g. enforceability of contracts, health services).
- Tax morale: numerous empirical studies proved that a significant part of taxpayers would pay tax even if the probability of getting caught would be null. Generally, positive tax morale means the taxpayers' rejection of tax fraud. High tax morale clearly curtails shadow economy, as the taxpayer does not participate in the shadow economy regardless of the relative benefits of tax

evasion. Tax morale can be influenced by many factors: it can be affected by the quality of public services, the extent of democratic control perceived over the government, the tax authority's attitude toward taxpayers, the social norms of the micro-environment and the perceived prevalence of shadow economy (Feld – Frey 2007; Semjén et al. 2009).

So tax evasion is the combined effect of several factors. Determining the weight of each factor is not an easy task and may vary from country to country. At the same time, the collection compiled by Schneider (2012) summarizing findings of 34 empirical findings could be helpful. The table below shows what percentage of the changes in the size of shadow economy can be explained by a given factor, based on the average values of results obtained from the studies examined.

Table 1. Main factors explaining changes in shadow economy

Factors influencing shadow economy	What percentage of the change in shadow economy is explained by the given factor (percentage)
Increase of tax burden	35–38
Quality of state institutions	10–12
Grants and subsidies	5–7
Labour market regulation	7–9
Public services	5–7
Tax morale	22–25
Combined effect of the above factors	84–98

Source: Schneider (2012).

Note: The table summarizes the conclusions of studies where the so-called MIMC (multiple indicators, multiple causes) or the cash demand method were used to analyse the size of the shadow economy (Schneider 2012; Laczkó 2009).

According to Schneider's conclusions (2012), the growth of shadow economy is influenced mostly by the tax burden, but the studies examined found a significant impact of the quality of state institutions and tax morale as well. At the same time, it is important to point out that deterrence (i.e. probability of getting caught, size of penalty or quality of the tax audits) has not been included as an explanatory variable in these studies, as there is no adequate data available that cover several countries.

3. THE SIZE OF SHADOW ECONOMY IN HUNGARY

The size of shadow economy can be estimated by direct and indirect methods. Direct methods include collection of data from the population or companies and micro-level administrative data, such as procedures relying on the analysis of the findings of tax inspections. Indirect procedures generally try to determine the total performance of economy using different variables and compare this estimated result with the values registered; they also include cash demand methods where the starting point is that most transactions accompanying underground activities are carried out in cash, which creates an excess demand for cash. The advantage of indirect methods is that they require less data and are therefore suitable for international comparisons as well, while direct methods can paint a more accurate picture of the breakdown and heterogeneity of shadow economy (Benedek et al. 2013).

Most studies covering several countries estimate the proportion of Hungarian shadow economy as being higher than Western European average and smaller compared to some Eastern and Central European countries. According to the research also used as source by Eurostat, shadow economy represented 22–25 percent of GDP in Hungary between 2003 and 2013, with a constantly decreasing trend (Schneider 2013). Compared to countries in the region, this value was smaller than the one observed in Poland (24–28 percent), but exceeded Slovakia (15–18 percent) and the Czech Republic (16–20 percent). The average EU-27 was estimated at 18 to 22 percent in this period.

Albeit it is not fully comparable to the above, it is still relevant for economic statistics that the Hungarian Central Statistical Office (CSO) also calculates GDP by estimating activities and income declared with lower than the real values or not registered at all. Their size, as estimated by the CSO, was 15.3 percent of GDP in 2002 and 14.9 percent of GDP in 2005. Besides the declared and registered data, the CSO needs to work with estimates regarding the shadow economy basically for the following reasons: costs are overdeclared and sales revenue is underdeclared so as to avoid tax and contribution liability, unbilled transactions and wage payments, employee income reported as services used (Murai – Ritzlné 2011).

In addition to the estimates of the shadow economy as a whole in Hungary, several studies have been conducted on undeclared work. Undeclared work can fall into two categories basically: there is informal employment where the employee has no legal employment and receives the entire wage without any documents, and there is wage underreporting where the employee is employed legally, but a part of his or her wage is undeclared. The latter category also includes the cases where the employee works under a fictitious services agreement so that his or her labour income can be declared as capital income which falls into a lower tax rate category. Studies estimating informal employment suggest the proportion

of informal employees is between 10 and 17 percent (Elek et al. 2009; Benedek 2013). The proportions did not change between 2001 and 2007 despite the fact that in 2002 a considerable minimum wage increase was implemented, which literature assumes to increase undeclared work among less productive employees. The studies based on micro databases also point out the groups where informal employment is prevalent. Elek et al. (2009) examined undeclared employment based on the Labour Survey of the Central Statistical Office and administrative data (National Health Insurance Fund – OEP, Central Administration of National Pension Insurance – ONYF). Based on their findings, significant differences can be observed between the various groups of the labour market in terms of the size of undeclared employment. Undeclared employment is higher among entrepreneurs, males and younger groups (25 to 39 years). Based on domicile, undeclared work is highest in the central part of the country and higher than average also in the Great Plains (Alföld). More than one third of all the undeclared employees was observed in Central Hungary, while the central region and the Great Plains together account for more than 60 percent.

Several studies estimated the size of wage underreporting by focusing on the ratio of fictitious minimum wage earners, starting from the assumption that the outlying values of the wage distribution at the minimum wage (*Figure 1*)

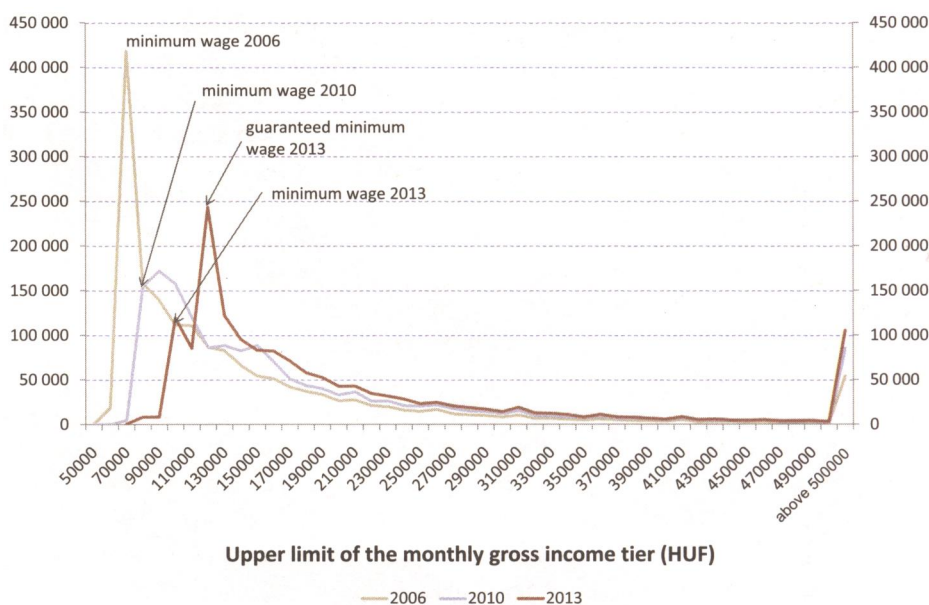


Figure 1. Breakdown of gross wages in the competitive sector based on the wage rate survey in 2006, 2010 and 2013

are partially caused by the fact that businesses declare their employees with lower income than the actual values and pay a part of the wages without a paycheck.

Elek et al. (2009, 2012) estimated the ratio of fictitious minimum wage earners by using the wage distribution of total economy in 2003 and 2010. The method essentially attempts to estimate the real wages of minimum wage earners using the individual characteristics reported in the Wage Survey (age, education, occupation) and the part of wage distribution in excess of the minimum wage. Based on these calculations, roughly half of the employees declared with minimum wage are likely to hide a part of their income. According to the results, various labour market groups are quite diverse in terms of the probability of income underreporting among minimum wage earners. Svraka et al. (2013) reached the conclusion that income underreporting with minimum wage must be even higher than that estimated by the study of Elek et al. (2009), as it was based on the data of the Wage Survey, which was conducted among businesses with at least 5 employees and therefore it covered a more transparent part of the labour market. Comparing the Wage Survey to data from the monthly employer contribution returns, it can be concluded that the Wage Survey does not include a significant part of low earner employees.

Similar conclusions were drawn by Semjén et al. (2009) using completely different methods. According to the data of a questionnaire-based data collection conducted in 2008, 15 percent of the 18 to 60-year age group had worked for wages partially or completely undeclared in the two years preceding the survey, while 14 percent received their wage based on a partially or completely fictitious contract. The survey shows that the proportion of people who receive income without formal employment is the highest at the periphery of the labour market. Receiving some of the income without formal documents was more frequent than average among the less educated people, young people, odd-job workers or unemployed people. At the same time, payment into bank accounts is clearly prevalent among people in intellectual jobs (college educated, employees in administration, health care, culture).

A key area in connection with undeclared work is the tax evasion of self-employed people. Indeed, self-employed people have generally more opportunities to hide their actual income by reclassifying their wages as capital income, reporting excessive costs or through depreciation rules than taxpayers who pay taxes on wages. Krekó and P. Kiss (2008) estimated that the tax base avoided by self-employed people was around 8 percent of the GDP, which means the tax revenue thus lost was 4 percent of the GDP.

Fewer studies have inquired into tax evasion related to consumption and measuring it. Based on the findings of Krekó and P. Kiss (2008), a VAT tax base corre-

sponding to 13–14 percent of the GDP was undeclared, causing a tax revenue loss of 2 percent of the GDP. They attributed this primarily to hiding domestic sales, and to a smaller extent to undeclared import and illegal VAT reclaims.

4. CAUSES OF THE SHADOW ECONOMY IN HUNGARY

Based on the topics discussed in the first chapter, we summarize the findings related to tax burden, probability of getting caught and tax morale, among the causes of shadow economy experienced in Hungary.

Before 2010, tax burdens on labour income in Hungary were by far the most progressive and highest in the region. The phasing out of the general employee tax credit and the high second tax rate caused marginal tax wedge (which shows the excess tax and contribution burden to total employer cost in case of wage increase) to reach 64 percent in the case of average wage, and 67 percent in the case of 167 percent of the average wage in 2010 (Figure 2).

This system provided incentives to underreport wages both to employers and employees. We can draw a picture of the impact of tax rates on tax evasion expressed in numbers from estimates of the elasticity of reported income. Accord-

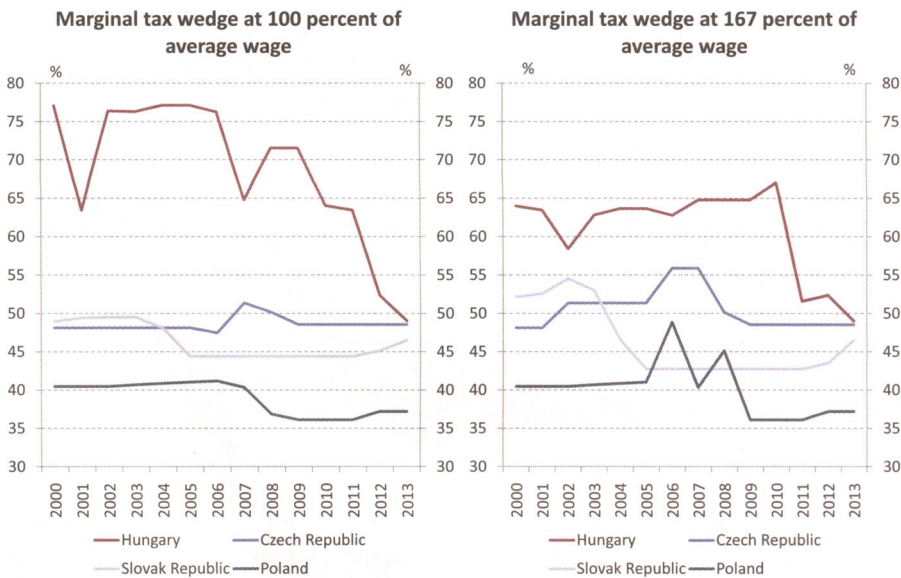


Figure 2. Marginal tax wedge in the case of average wage and 167 percent of average wage in Hungary and countries in the region

Source: OECD

Society and Economy 37 (2015)

ing to estimates by Bakos et al. (2008) on a sample of personal income tax returns from 2004 and 2005, low earner taxpayers are not associated with high tax sensitivity, while taxpayers earning more than HUF 2 million per year showed high elasticity, in excess of 0.3. Benczúr et al. (2012) reassessed these conclusions and reported lower elasticity: they found significant elasticity of roughly 0.1 in the 3–5 million income sub-sample. In practice, this means that if marginal tax rate decreased 1 percentage point in this income category, the reported income of these taxpayers would increase about 0.15 percent.

These results show the changes of labour supply and tax evasion on a combined basis and currently there is no consensus on what proportion of elasticity is explained by these two channels separately. An argument for the tax evasion channel is that the hours worked by high earners are high initially; so in their case it is questionable that they can increase their labour supply by much (however, a labour supply response is still possible in their case through work intensity). At the same time, an argument for the labour supply channel is that higher elasticity was measured in the case of women, while tax evasion was higher among men. Furthermore, no significant differences were found among people with various types of income and people with wage income only; this suggests that the possibility of income reclassification (a possible method of tax evasion) would not cause higher elasticity (Benczúr et al. 2012). Generally we can conclude that marginal rates have an impact on the size of declared income in the case of higher earners, as a result of changes in labour supply as well as in tax evasion.

Fewer studies are available on the causes of tax evasion in the case of consumption taxes (VAT, excise duty). Based on the conclusions of Kerekó – P. Kiss (2008), tax evasion is present primarily in underreporting domestic sales, especially in the case of retail sector, as that is the situation where both parties are interested in concluding the sale without an invoice. According to questionnaire-based studies (Semjén et al. 2009), the customer's primary reason for buying products or services from the shadow economy is the lower price (91 percent indicated this as reason). Another aspect in the decision to purchase without an invoice is that the products are more accessible in this case (32 percent indicate this as reason) and that in this way the customer helps someone who is in financial trouble (30 percent indicate this as reason). Accordingly, the elasticity of VAT tax base to tax rate is assumed to be high, but no studies have been conducted on this aspect.

There is also little data available on the risk of getting caught and its perception among the population and businesses. According to a survey conducted by Semjén et al. (2009) on the population's involvement in shadow economy, respondents estimated a probability of 64 percent that they would ever be held liable for not paying taxes. Based on the survey, taxpayers with experience in shadow economy consider being held accountable less likely, which shows that the experience of tax

avoiders is that they are not getting caught and therefore they are more willing to avoid tax. Nevertheless, the perception of the risk of getting caught is high in an international comparison. According to an international survey conducted in 2007, Hungary reported one of the highest ratios in the region in terms of people perceiving a high risk of getting caught (European Commission 2007), while the results still placed Hungary behind certain Western European countries in this area.

A frequent argument mentioned in connection with tax evasion is the ambivalent attitude of individuals to the state, in the post-Socialist countries. Society expects the state to provide, on the one hand, but distrust in government and avoiding the rules are also recognized and admitted, on the other. This is confirmed by the survey conducted by Semjén et al. (2009) too. According to their conclusions, most people accept the laws as being the most important rules governing social cooperation, but they also agree that those who want to be successful must break a rule or two. The latter public opinion clearly undermines tax morale. At the same time, other surveys show that Hungarian society clearly condemns tax evasion. Based on the results of the World Value Survey 2005, 90 percent of the Hungarian population found it unacceptable to underreport part of their income from the tax authority; this ratio is around the average of Europe (Bernát 2009). How the quality of public services is judged can also have an impact on tax morale. For example, according to the survey conducted by Hanošek – Palda (2002) among the populations of the Visegrad countries, a higher ratio of respondents dissatisfied with the quality of public services claimed they evaded tax. At the same time, the causality is questionable: it is possible that the strong criticism against public services is a subsequent excuse perhaps unconsciously by tax avoiders.

5. MEASURES ADOPTED IN THE LATEST YEARS TO REDUCE THE SHARE OF THE SHADOW ECONOMY

Whitening the economy was a key objective for Hungary in the last years; the government implemented numerous measures with this purpose. The measures tried to combat shadow economy through various channels. Measures improving the probability of getting caught and the efficiency of tax audits focused mostly on preventing corporate income of being concealed, as the prevention of income hiding could trigger a reduction in other forms of fraud (profit and wage under-reporting). Among these measures stand out the implementation of online cash registers, the tax registration procedure, restrictions on cash operations between businesses and the introduction of detailed invoice summarization in case of invoices higher than HUF 2 million.

Society and Economy 37 (2015)

5.1. Employment and income-related measures

Several action packages were implemented to reduce income underreporting caused by high tax burden and undeclared employment. While reforming the labour taxes, the government's purpose was to increase worker intensity and to reduce income underreporting in case of groups with higher activity rates and more closely connected to labour market. This objective was pursued by reducing the marginal tax wedges on income from excess work, which was implemented by introducing the flat rate tax system (see *Figure 2*).

In the case of groups with lower activity rates, the purpose was to increase activity; contrary to previous practices, this was not implemented by general employee tax credits, but by tax reliefs aimed at groups which are the most disadvantaged on the labour market and characterized by a high elasticity at the extensive margin. Indeed, in case of widespread wage underreporting, general tax credits will not reach less productive employees, but often are used by the more productive ones that are more involved in tax evasion. The tax reliefs introduced are focusing on six target groups: career starters, the age group under 25, the age category above 55, long-term unemployed, unskilled workers and mothers returning to work after maternity leave.

In addition to the above, the flat rate tax system introduced in the case of labour-income taxes largely simplified the tax system, reducing the auxiliary costs of tax payment (filing returns, interpreting rules) and thus eliminating the factors stimulating tax evasion. At the same time, it is important to note that several tax reliefs are available both in the case of contributions and personal income tax, which causes a significant tax base contraction and creates opportunities for tax optimization.

In the case of self-employed people, who are strongly involved in tax evasion, whitening could be facilitated by the lump sum tax of small businesses ('KATA') introduced in 2013, which is a favorable alternative especially for self-employed people with sales revenue of less than HUF 6 million and involves minimal administrative burden. Businesses falling within the scope of the lump sum tax of small businesses can replace every major taxes on income of the business (personal income tax, contributions, tax on business dividend base, corporate tax, social contribution tax, health contribution and vocational training contribution) with an itemized tax of HUF 50 thousand per month (HUF 25 thousand in the case of non-full time entrepreneurs). The lump sum tax of small businesses largely reduces the relative gain from tax evasion by reducing tax burden and involving minimal administrative effort, which can contribute to the whitening of the self-employed sector.

However, it is important to note that in parallel with the aforementioned measures, the major minimum wage raise and raising the general VAT rate to 27 percent in 2012 could have anti-whitening effects. While the first one can theoretically widen informal employment among less productive employees, the latter one increased the relative gain from VAT fraud. However, according to the inspection statistics of the National Labour Office and the most recent retail statistics, it seems these actions were generally counterweighed by whitening measures. Based on the inspections of the National Labour Office, the size of informal employment discovered had increased significantly in the year preceding the crisis and has constantly declined since. As for its breakdown, the excess weight of the building industry dropped, while property protection gained significant weight in the last years (Figure 3). Of course, the informal employment discovered by audits of the National Labour Office cannot be comprehensive, but we do get a picture of the sectors mostly involved.

The size of the undeclared employment discovered is worth comparing also to the number of employees working in that sector. Data from the Labour Force Survey is less useful for comparison, as it is prepared based on self-assessment and is likely to include a part of informal employment. Instead, we use institutional statistics, but their major disadvantage lies in that they do not include companies

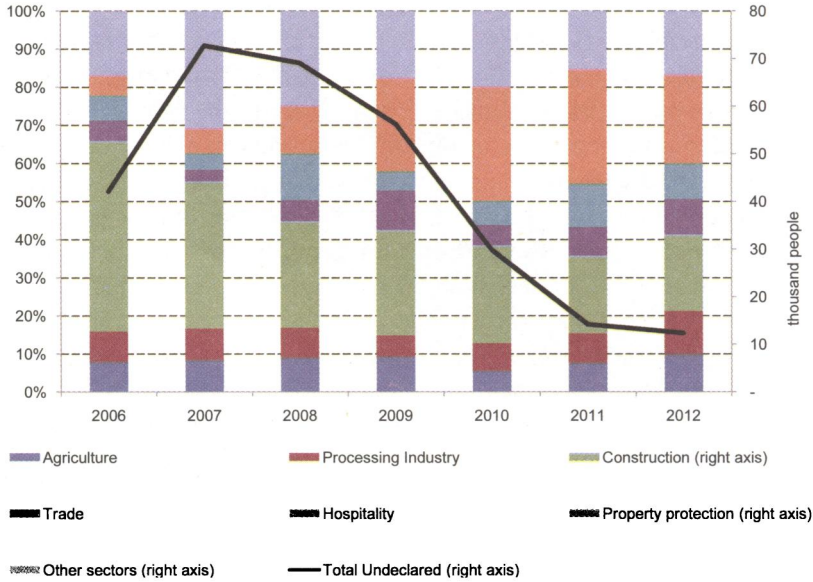


Figure 3. Size of informal employment discovered and its breakdown among the sectors

Source: National Labour Office.

Society and Economy 37 (2015)

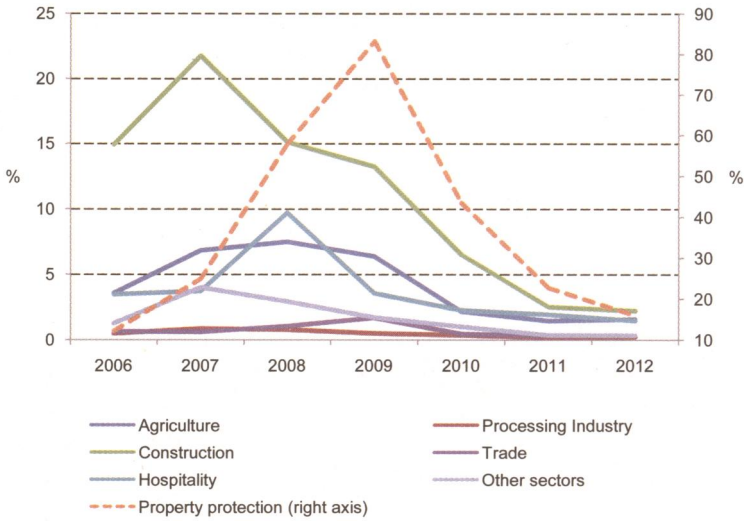


Figure 4. Ratio of informal employment to the number of employees in the various sectors (institutional statistics)

Source: National Labour Office.

with less than five employees. The largest proportion of informal employment takes place in the property protection sector; a significant share is held also by the building industry (Figure 4). Overall, the ratio of informal employment to the number of employees in the various sectors declined in the last years.

As for the labour market, conclusions on whitening can also be deduced based on wage data. If the earnings indices of the small and large enterprises differ steeply, it can be caused by whitening, but it is important to note that whitening may not be the only reason. Several times in the last ten years, the earnings index of businesses employing less than 50 employees exceeded that of the larger companies and these periods corresponded to policy measures which could trigger a similar effect. In 2006–2007, contribution liability was introduced for the double of the minimum wage, which was often accompanied by the increase of declared wages. In 2012, as part of the transformation of the personal income tax system, the government significantly increased the minimum wage and introduced a wage compensation scheme to companies that increase the wages of low earners to an extent that the changes of the tax system does not decrease their net income, which also led to a considerable surge of wages in the small business sector. In 2014, another slight divergence could be observed in wage dynamics between small and large businesses. However, currently there is no action related to labour-income taxes which would justify it. But indirectly, the introduction of

Society and Economy 37 (2015)



Figure 5. Evolution of the annual index of regular earners in the private sector (annual average)

online cash registers can also cause wage whitening as the containment of income underreporting causes companies to have no undeclared income for covering the undeclared wages paid, which can contain wage underreporting, too. This does not rule out the whitening effect, but the higher wage dynamics could be caused by methodological and measuring procedures. The institutional wage statistics of the Central Statistical Office fully include companies employing more than 50 employees, and collect from the smaller ones by representative sampling. The sample of companies employing less than 50 persons is replaced annually which can distort the wage index as a result of composition. Based on the evolution of the earnings indices of the two headcount categories, it is likely that the sample change distorted the earnings index of 2013 negatively, increasing the wage dynamics of small businesses in 2014 through the base effect.

5.2. Trade whitening

In the last year, changes related to the shadow economy could be observed in the retail sector. Through introduction of online cash registers, a various scope of business types could be whitened, which could contribute to the gradual rise of retail sales volume observed in the last months.

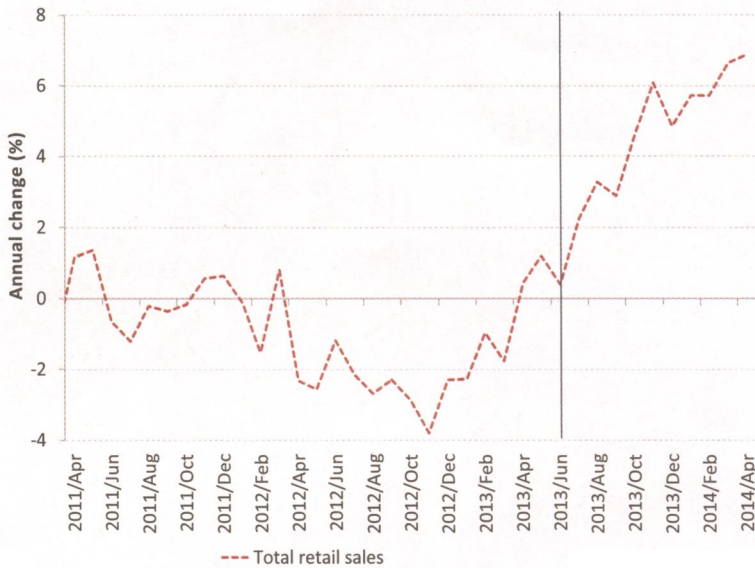


Figure 6. Annual change of retail sales

Source: Hungarian Central Statistical Office.

It is hard to estimate the extent of whitening. Currently, roughly 150 thousand retail and 50 thousand catering units are operating in the country, using 400 thousand cash registers; the change should have affected roughly 250 thousand, based on preliminary data. But orders were placed only for roughly 130 thousand registers. The lower demand could be explained by business windups (there may be some businesses which could not produce the extra costs of online cash registers) and there may be companies which preferred to issue invoices instead of the cash register. The entire process has not been completed yet, but currently the number of cash registers connected well exceeds 100 thousand. At the time of the latest retail sales data available, from April 2014, the number of cash registers connected was in excess of 60 thousand; it is likely that the gradual rise in retail sales volume will continue until the process is completed, as a result both of improved underlying processes (e.g. increased employment) and of the whitening effect by the introduction of online cash registers (*Figure 6*).

The significant rise in VAT revenues reported in 2014 is likely to be associated with the whitening, too. According to data of the Central Statistical Office, accrual-based VAT revenue increased roughly 15 percent in Q1 2014, while the household consumption in national economy used for estimating the VAT base only increased 4 percent in nominal terms.

Society and Economy 37 (2015)

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