The Financial Crisis and the Formal-Informal Sector Earnings Gap: Evidence from Serbia Using Four Alternative Measures of Informality[†]

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Abstract

Adding to the emerging evidence of the formal-informal sector earnings gap in the former Socialist regimes of Eastern Europe and Central Asia this paper examines the incidence and determinants of the formal-informal sector earnings gap for Serbian males using four alternative measures of informality. Results are obtained for two identical, nationally representative labor force surveys—one just prior to the impact of the recent International Financial Crisis and one about a year into the Crisis, so that the study additionally examines the impact of the Crisis on the incidence and determinants of the formal-informal sector earnings gap in Serbia during the first year of the Crisis. This paper establishes seven main results, as follows: (1) the presence of a substantively large formal-informal sector gap (favoring the formal sector); (2) the gap appears to have decreased substantially overall, following the Crisis (though with some variation across informality measures); (3) however, when controlling for observable characteristics, the gap has *not* really changed that much following the Crisis—in turn indicating persistency in the gap once observable characteristics have been controlled for arising from changes in the composition of the informal sector following the Crisis, whereby workers with relatively more favorable characteristics are now "pushed" into informality; (4) both endowments and the returns to characteristics increase the earnings gap—indicating that formal sector workers are concentrated in better paying industries and occupations, have more education, and so on, and at the same time also have higher returns to their (already favorable) characteristics overall; (5) while observed individual characteristics explain part of the earnings gaps, a substantial part of the gap is left unexplained; (6) the unexplained part of the gap appears to have increased with the onset of the Crisis in many cases, thus indicating a worsening in the earnings position of informal sector workers that is not attributable to their observable characteristics; (7) pursuing detailed decompositions of the formal-informal earnings gap indicates that education and part-time status consistently are among the main drivers of the observed gap across the different alternative specifications of the two-and three fold decompositions. In sum, these results are consistent with the presence of what in studies of gender and ethnic earnings differentials has been termed "discrimination" (and some increase in this following the Crisis) towards informal sector workers—which is here interpreted as reflecting non-observable characteristics of informal sector workers such as relatively lower bargaining power and access to personal and professional networks—but at the same time also point towards the importance of continued attention towards, among other factors, the education system as a potentially important vehicle for decreasing the formal-informal sector earnings gap in Serbia. Lastly, policy recommendations and topics for future research are also discussed.

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1. Introduction

Since the concept of the informal sector was first introduced by Hart (1971), the informal sector has received substantial attention both in the academic literature and in the policy arena.[1] But even despite the wealth of available evidence, some things are still poorly understood. First, what exactly is the informal sector? Despite years of research and public policy debate it does not seem that the concept is used in a uniform, transparent way. Some definitions seem to be based on legality versus illegality (especially in terms of tax evasion), others on whether receives benefits such as health and pensions benefits or not, while still others seem to be based solely on the size of a given enterprise, characterizing small enterprises as informal and larger ones as formal (yet, what is "small" and "large" is clearly debatable—and likely also highly contextual). It therefore seems appropriate, when desiring to explore some aspect or other of the informal sector to adhere to not just a single definition but to apply a multifaceted framework, incorporating instead several alternative definitions of informality. Second, despite the amount of empirical evidence currently available for both developed and developing countries, the evidence from the former socialist countries of Eastern Europe and Central Asia is still scarce,[2] though starting to emerge (Lehmann, 2010). The issue here is the relative scarcity of data available for these countries, though this is likely to change in the coming years as more and higher quality data becomes available from these countries. Third, only little, if anything, is known about the impact of international financial crises on the informal sector. The issue again here is lack of relevant data since, fortunately, the international crises are few and far between.

In response to these issues, this paper specifically examines the incidence and determinants of the formal-informal sector earnings gap for Serbia in the context of the recent International Financial Crisis, using four alternative measures of informality, as follows: (1) official (non) registration as pertaining to tax-purposes; contract status; health and pension benefit receipt; and firm size. The case of Serbia is interesting both because the informal sector appears quite pervasive in Serbia, employing about a third of the private sector, but also since there seems to be several plausible causes for a pervasive informal sector in Serbia, not least due

[1] For extensive reviews see, for example, Blunch et al. (2001), Fields (2007), Kanbur (2009), Lehmann (2010), Perry et al. (2007), and Ruffer and Knight (2007).

[2] With Serbia, the country studied here, being a case in point: to the best of my knowledge, the only available studies here are Kogan (2011), Koettl (2010) and Krstić and Sanfey (2010)—all of which differ from (though at the same time complement) the scope and contribution of this paper—and Macias (2009), which is a purely descriptive paper.

to the tax-system (Koettl, 2010). Additionally, and not least important, the Serbian Labor Force Survey (LFS) provide high quality data to study these issues.

By estimating Mincer earnings regressions and decomposing the resultant formal-informal sector earnings gap in the Blinder (1973)-Oaxaca (1973) tradition, as well as performing detailed decompositions following Oaxaca and Ransom (1999) and Yun (2005) for the LFS in October 2008 (i.e. pre-crisis) and again in October 2009 (i.e. post-crisis), the following research questions are explored: (1) Is there a substantively large formal-informal sector gap (favoring the formal sector) in Serbia? (2) If so, did the raw formal-informal sector earnings gap increase or decrease following the crisis? (3) If a gap exists, what is the relative composition of this in terms of endowments/characteristics versus the returns to these endowments/ characteristics overall? In other words, are informal sector workers hurt by their characteristics/ endowments, by their returns to these characteristics/endowments—or, possibly, both? (4) What is the relative composition of any formal-informal sector earning gap established in (1) in terms of observable versus unobservable characteristics? In other words, how important is discrimination (i.e., the interpretation of unobservable part of the gap) towards the informal sector/informal sector in explaining the earnings gap? (5) Did the relative share of the unexplained gap change following the onset of the Crisis? In particular, did it increase (decrease) with the onset of the Crisis—indicating an increase (decrease) in discrimination (i.e., the interpretation of unobservable part of the gap) towards the informal sector/informal sector workers following the Crisis? (6) If undertaking detailed decompositions of any established formal-informal sector earnings gap, which factors—such as education, part-time status, industry, occupation—appear to be the consistently among the main drivers of the observed gap?

The remainder of this paper is structured as follows. First, the next section reviews recent developments in Serbia, focusing at issues relevant for the formal-informal sector earnings gap. Section three presents the data, discusses the construction of the dependent and explanatory variables, as well as the four informality measures, and estimates the raw formal-informal sector earnings gaps for all four measures both pre- and post Crisis. This is followed, in section four, by a discussion of the estimation strategy and related issues. Section five presents the main results starting with the results from the Mincer earnings regressions, then the overall decompositions and finally the detailed decompositions. Section six concludes, discusses policy implications, and provides directions for further research. Several of the results tables are quite

large—including the results from the Mincer regressions and the detailed decompositions—and have therefore been relegated to the Appendices at the very end of the paper.

2. Background: Labor Markets, Legislation and Informality in Serbia

With the collapse of the Berlin Wall in 1989 followed, as in other former socialist countries, formally the transition towards a market economy. For the case of Serbia, though, those first ten years were no race towards a market economy, for sure—as perhaps most clearly summarized by Babović (2008: 13) "During the last decade of the twentieth century, Serbian society was characterized by a state of blocked transformation that included the obstruction of essential changes in market economy and political democracy by the ruling elite. A profound economic crisis, a deterioration of social institutions, wars with grave economic, social and humanitarian consequences, the impoverishment of a large portion of the population, the expansion of the informal economy and the hampering of the development of civil society, were the main characteristics of Serbian society in this period."

Since then, however, Serbia has witnessed substantial growth—about 6% per capita per year between 2000 and 2006—but at the same time still remains one of the poorest countries in Europe (OECD, 2008: 15). Turning to the labor market, employment has decreased about 2.5 % per year over the same period, especially in large and medium enterprises and in peasant farming (OECD, 2008: 17).

One measure taken to try to combat the declining employment is improved legislation, where an important step was taken in 2004 with the creation of a new Business Register Agency. The aim of this Agency was to coordinate several administrative functions that previously required contact with different authorities. In addition to this, starting in 2006, this Agency also keeps records of "entrepreneurs", i.e. self-employed own-account workers with or without employees, and handles their enrolment in social insurance (OECD, 2008:22). The overall aim of this is to stimulate the creation of individual companies in Serbia and thereby stimulate overall economic growth in the Serbian economy, thus leading also to increased employment.

While there, thus, have been some improvements in Serbian legislation vis-à-vis improved business environment and increased employment opportunities, many obstacles still remain. Indeed, it has been suggested that due to the specific nature of the Serbian tax and benefit system the value of social security contributions that are associated with formal

employment have to be extremely high to offset the opportunity costs of formal employment, particularly for low-wage earners (Koettl, 2010: 9).[3] The reason for this is minimum social security contributions, as well as the design of social assistance and family benefits. Considering these as a package, informal workers at low wages would have to give up a considerable amount of their informal wage were they to "formalize" instead, and it is unlikely that the value of social security entitlement (and other benefits like formal employment protection legislation) that they get in return for formalization will exceed these implicit costs . Notably, the same holds for the inactive part of the labor market, when considering formal work at low wage levels. Koettl (2010: 9) goes on to conclude that "In other words, so called-mini jobs and midi-jobs—that is, part-time jobs that pay less than the full-time minimum wage—are hardly economically viable in Serbia. Hence, workers with low educational attainment—like the informally employed and the inactive—might by and large be excluded from formal work in Serbia."

The above discussion, on the other hand, provides at least part of the explanation of the generally found "stylized fact" that informal sector workers tend to be less educated and lower earning (or vice versa) than formal sector workers[4]—specifically for the case of Serbia: namely the role of legislation, and here specifically the design of social security, social assistance and family benefits.

3. Data and Descriptive Analysis

The empirical analyses of this paper examine household survey data from two rounds of the Serbian Labor Force Survey (LFS), October 2008 (i.e. pre-crisis) and October 2009 (i.e. post-crisis, by about one year). The Serbia LFS is a two-stage, stratified survey that is representative at the national level. In the first stage, enumeration areas were selected systematically with probability proportional to the size of the population aged 15 and above (the target population) using the sampling frame of the 2002 Census. In the second stage households were selected within the enumeration areas with equal probability (simple random selection). The initial weight arising from the initial sampling design was further corrected ex-post to allow for non-response, aiming at creating sampling weights that make the sample nationally representative (these weights are used in all subsequent estimations). The survey contains information on labor

[3] The remainder of this section draws extensively on Koettl (2010), as well.
[4] That this is also the case here will be clear from the subsequent discussion; also see Tables B1 and B2 in Appendix B.

market status, earnings, occupation, industry, firm size, benefits and so on, as well as information on background variables such as age, gender, educational attainment, and area of residence, which are also important factors in analyses of earnings determinants.[5] The analysis in this paper examines the sample of male workers 15 years old and above.[6]

Again, while it is hard to come up with one single definition of the informal sector, the current dataset allows examining informality in Serbia along four dimensions that all seem relevant based on the previous literature on the informal sector to a greater or smaller degree: one based on (il)legality, two on workers' rights/benefits receipt/social protection, and one based on the size of the firm.

First, the survey distinguishes between the different types of ownership—specifically, among private firms, a distinction is made between registered and non-registered firms, where the registration pertains to taxes and other payments and regulations. The first dimension therefore is based on a dummy variable which is one if a worker works in a private, non-registered firm and zero otherwise. This sample is quite small, however, and so fortunately, it is possible to define several alternative informality measures. The second measure is based on a worker's contract status and is defined as one if a worker has a contract and zero otherwise. Benefit receipts is the third dimension of informality explored here. I again construct a binary measure, this time it is defined as one if a worker neither receives health benefits nor pension benefits and zero otherwise. Lastly, the informal sector has been associated with smaller firms historically. While this is perhaps the weakest measure of informality available in the present dataset, it is included here for completeness—certainly small firms can have a role to play in the development from a transition to a market economy and therefore would seem to an interesting dimension to explore in its own right.[7]

The dependent variable is (logged) total earnings[8] in the previous month (i.e., the month before October 2008 and October 2009, respectively). Unfortunately, this information is only

[5] Somewhat surprisingly, the survey does not collect information on union membership, which appears to be a potentially relevant variable when examining earnings determinants.
[6] A list of all the variables used in these analyses as well as their definitions is given in Table A1, Appendix A. The definition of variables is discussed in more detail in the remainder of this section.
[7] I here use the definition of so-called "micro firms," e.g. Söderbom and Teal (2004), where micro firms are defined as firms with five or less employees.
[8] One might argue that wage rates are preferable to earnings, especially if the interest is more narrowly related to worker productivity, but for policy purposes the worker's take-home earnings seems to be the main object of interest since that is what he ultimately will use to sustain the livelihood of his household.

collected from employees, so that the self-employed and owner-operators—both of which potentially are both an important and a large part of the overall Serbian informal sector—implicitly must be excluded from the analysis. As a result, the analysis in this paper examines a specific part of the overall Serbian informal sector, namely the part that contains employed workers who obtain a salary.

Among the key explanatory variables are age, which helps control for potential general experience, among other things. To obtain as flexible functional form as possible a series of birth cohorts are created: 15-24, 25-34, 35-44, 45-54, 55-64, and 65 and above. Educational attainment is measured as the highest level completed, ranging from "Without education" through "PhD." I consider a set of three binary variables, corresponding to the completion of primary or less (reference), secondary, and tertiary education. Among the work related variables, I first construct a dummy variable for part-time work. Industry and occupation clearly are potentially important determinants of earnings, as well, and are each included as a series of nine dummy variables (reference group for industry: agriculture; reference group for occupation: elementary occupations). Firm size is also a potentially important determinant of earnings and is included as a set of six dummies, with 1-5 employees as the reference category. Lastly, the urban dummy and the region of residence cluster fixed effects capture economic conditions specific to the area (as well as everything else related to the region in question), which are potentially important in explaining labor earnings.

Parts of the previous discussion implicitly gives some of the sample restrictions—most importantly, since the emphasis in this analysis is on the earnings of adult males, the sample is initially restricted to the 2,978 males in October 2008 and 2,796 males in October 2009 who are employed and 15 years of age and above. Additionally, information on some observations is missing for either the dependent variable or for one or more of the explanatory variables, leading to final estimation samples of 2,783 observations for the October 2008 estimation sample and 2,577 observations for the October 2009 estimation sample. Descriptive statistics for the analysis samples across informality status are reported in Appendix B, Tables B1-B2.

To get an initial handle on the formal-informal earnings gap during the first year-and-a-bit of the International Financial Crisis, Table 1 presents log earnings for the formal and informal sector for the October 2008 sample and the October 2009 sample, using all four alternative

informality definitions discussed previously. To obtain results in percent rather than log-points, the earnings gaps are also presented in their de-logged form.[9]

A few results from the table are rather striking. First, the formal-informal sector earnings gap is pervasive, no matter the definition or time period considered. Second, however, there is a bit of a range in the estimated earnings gap—ranging from 22.5 percentage-points to about 60 percentage-points in October 2008 and ranging from about 20 to about 47 percentage-points in October 2009, depending on the informality measure considered. The micro firms based (i.e. the least preferred) measure is an obvious outlier here, with an estimated gap that is about half of the other gaps or less, all of which are 40 percentage-points or higher in both time periods (except for the benefits-based measure in October 2009). The fact that the earnings gap based on the micro firm measure is consistently much lower than the three other measures again hints at micro-firms possibly not being a relevant dimension when examining the informal sector, at least not for Serbia. Third, considering the four informality measures overall the earnings gap narrowed following the crisis for all four measures, though the decrease in the firm sized based measure again is a bit of an outlier, with only moderate decrease (3.1 percentage-points). Examining the evidence as a whole, however—incorporating the size of the changes, the desirability of the measures as "true" informality measures and so on—it seems that the overall formal-informal sector earnings gap decreased substantially following the Crisis.

So what might account for these differences in earnings between the two sectors more generally—and for the narrowing of the gap following the Crisis? The previous section discussed how Serbian legislation related to minimum social security contributions, social assistance, and family benefits may help explain the generally found "stylized fact" that informal sector workers tend to be less educated and lower earning (or vice versa) than formal sector workers. From Tables B1 and B2 in Appendix B it can be seen that informal sector workers are indeed (much) worse off than formal sector workers in terms of human capital. For example, in October 2008 only 14.3 percent of workers in formally registered firms had completed primary education or less, while more than half of workers in firms that were not formally registered had completed primary or less (Table B1). On the other hand, almost 19 percent of workers in

[9] Using the formula: Gap in percentage-points = {exp[ln(earnings gap)] – 1}*100. Since the log-gap corresponds to running a regression of log earnings on a dummy of the informality measure one might suggest instead using Kennedy's (1981) bias correction for dummy variables in semi-logarithmic models—however, since the variance is so small here, the results are identical whether or not the correction is used (to the third decimal).

formally registered firms had completed tertiary education, while this was the case for only 1.5 percent of workers in firms that were not formally registered. Comparing Tables B1 and B2, however, it seems that the *composition* of the informal sector has changed following the Crisis: for example, while, again, more than half of workers in firms that were not formally registered had completed primary or less this had decreased to about 37 percent in October 2009. Similarly, the share of workers with completed secondary education increased from about 43 percent to about 56 percent and the share of workers with tertiary education from 1.5 percent to 6.6 percent.

Table 1. Raw Formal-Informal Sector Earnings Gap (Logs and Percent) Using Four Alternative Informality Measures: October 2008 and October 2009

	October 2008				*October 2009*			
	(1) Not formally registered	*(2) No labor contract*	*(3) No benefits*	*(4) Micro-firms*	*(1) Not formally registered*	*(2) No labor contract*	*(3) No benefits*	*(4) Micro-firms*
Formal sector:	10.067***	10.102***	10.108***	10.099***	10.079***	10.096***	10.093***	10.114***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Informal sector:	9.152***	9.437***	9.465***	9.844***	9.437***	9.572***	9.637***	9.898***
	[0.005]	[0.003]	[0.002]	[0.001]	[0.005]	[0.003]	[0.002]	[0.001]
Difference (Logs):	0.914***	0.665***	0.643***	0.255***	0.642***	0.524***	0.456***	0.216***
	[0.005]	[0.003]	[0.002]	[0.001]	[0.005]	[0.003]	[0.002]	[0.001]
Difference (Percent):	0.599	0.486	0.474	0.225	0.474	0.408	0.366	0.194
N	2,783	2,783	2,783	2,783	2,577	2,577	2,577	2,577

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors. *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 and October 2009 Rounds).

While the existence of substantively large formal-informal sector earnings gaps have now been established across all four informality measures and for both the pre- and post Crisis period—and with sectoral human capital differences motivated as possibly accounting for at least some of this gap as well as the narrowing of the gap following the onset of the Crisis—the

objective of the main analysis of this paper is to now try to "explain"[10] these gaps in more detail in terms of, on the one hand, characteristics/endowments such as educational attainment and job characteristics and returns to these characteristics (three-fold division) and, on the other hand, observable and unobservable characteristics (two-fold division). While the empirical strategy underlying this approach is widely used, it still seems fruitful to review the main components in some detail, especially in terms of how it is tailored to the application pursued here—which, therefore, is the objective of the next section.

4. Estimation Strategy and Related Issues

The starting point of the Blinder-Oaxaca approach to decompose earnings (or other) differentials is an OLS regression of the outcome in question, estimated separately across the two relevant groups (Blinder, 1973; Oaxaca, 1973); here, workers from the formal and the informal sector, respectively. As such, these regressions are—at least in this context—merely inputs into calculating the decompositions. However, it is potentially fruitful to consider these auxiliary regressions in and of themselves as separate and integral parts of the overall analysis, also. Both because the results from these regressions directly indicate the different returns to characteristics across informality status but also because their specification in terms of explanatory variables, functional form, and so on, will affect the subsequent decomposition results.

Human capital theory suggests that education and potential experience directly affect earnings through the impact on individuals' productivity in the labor market and also suggest additional factors that are potentially important determinants of earnings such as education, industry and sector of employment, firm size, part-time status, and location of residence.

The first part of the multivariate analysis will examine these relationships, using ordinary least squares.[11] One potentially important econometric issue here is that educational attainment may be endogenous. The main concern here is possible omitted variables bias. Preferences and ability, for example, are unobserved and at the same time also, at least to some extent, determine both educational attainment and labor market earnings. However, as there are not available in this dataset any variables that may potentially act as instruments, it does not appear feasible to

[10] With causality being an issue here due to obvious endogeneity concerns—in turn indicating that any findings should more appropriately be viewed as indicating association, rather than causality per se, and any conclusions similarly modified accordingly.

[11] To present these results more succinctly these will be estimated as fully interacted (i.e., with informality status) models, rather than as estimated separately by informality status.

try to address this problem using instrumental variables methods. The effect of any omitted variables will therefore be captured by the error term, possibly causing omitted variables bias. As a result, we must interpret any subsequent results with caution and hence not give them a causal interpretation but rather as merely reflecting associations with labor market earnings. Further, so as to allow for arbitrary heteroskedasticity, the estimations will be carried out using Huber-White standard errors (Huber, 1967; White, 1980).

Again, these earnings regressions formally are merely inputs into the decomposition analysis. Specifically, the decomposition analysis amounts to examining to which extent the observed earnings gaps across informality status are attributable to differences in the observable characteristics, to differences in the returns to those characteristics, and to the interaction of the two (three-fold division)[12] and, relatedly, to which extent the observed earnings gaps are due to observable and unobservable characteristics (two-fold division).[13] This analysis will comprise the second part of the multivariate empirical analysis and will be pursued as an Oaxaca-Blinder type decomposition, using several different specifications for the baseline (i.e., "absence of discrimination") model. The standard errors of the individual components are computed according to the method detailed in Jann (2008), which extends the earlier method developed in Oaxaca and Ransom (1998) to deal with stochastic regressors.

In addition to examining the overall composition of the established earnings gaps, it would seem instructive to perform detailed decompositions, as well, whereby it would be possible to see which explanatory variables contribute the most to the three- and/or two-fold overall decompositions. An issue here is that while the overall decompositions are always identified, the results for categorical variables in detailed decompositions depend on the choice of the reference category (Oaxaca and Ransom 1999). A possible solution to this problem is to apply the deviation contrast transformation to the estimates before conducting the decomposition (Yun 2005); this is also the approach pursued here. Similar to the OLS regressions, the decomposition estimations also all allow for arbitrary heteroskedasticity (Huber, 1967; White, 1980). So as to condense the wealth of results obtained here somewhat—thereby easing the interpretation of the many results—the detailed decompositions are done groupwise, rather than

[12] See Winsborough and Dickinson (1971).
[13] See Oaxaca (1973), Blinder (1973), Cotton (1988), Reimers (1983), Neumark (1988), and Jann (2008) for different approaches.

for each individual variable (for example, for education as a whole, rather than separately for primary or less, secondary, and tertiary education).

5. Results

This section reviews the main results from the formal-informal sector earnings analysis for the Serbian Labor Force Survey from October 2008 and October 2009, thereby exploring whether the nature of the formal-informal sector earnings gap changed during the first year or so of the International Financial Crisis. This is done in three main parts: (i) OLS Mincer earnings regressions, (ii) overall earnings decompositions (both two- and three-fold), and (iii) detailed earnings decompositions (again both two- and three-fold). It should be noted that since some of the tables are rather large, they have been placed in the Appendices (but are referred to, and discussed, in the body text below).

(A) Mincer Earnings Regressions:

The results from the Mincer earnings regressions are presented in Tables C1 (October 2008) and C2 (October 2009). Each table presents the results for three different specifications for each of the four alternative informality measures: (i) only including the informality variable (thus recovering the raw formal-informal sector gaps from Table 1), (ii) adding controls, (iii) adding a full set of interactions with the informality measure.

For each survey, the results are remarkably consistent across the four informality measures. First, for all four measures the initial raw earnings gaps discussed previously decrease substantially when including controls. For example, the gap decreases from 59.9 percent ((exp[-0.914] – 1)*100) to 26.9 percent ((exp[-0.314] – 1)*100) when using formal registration of the enterprise as the informality measure in October 2008 (Table C1).[14] This again suggests that at least some of the gap can be explained by observable characteristics (as will be further explored in the Oaxaca-Blinder decompositions shortly); the substantial increase in R^2 when moving from the specifications with only the informality measure to adding the controls also supports this. Second, while the raw gap decreases substantially following the onset of the Crisis the gap adjusted for observable worker characteristic is remarkably stable. For example, while the raw

[14] Again, due to the small variance here, the results are identical whether or not Kennedy's (1981) bias correction is used instead (to the third decimal).

gap decreases from 59.9 percent ((exp[-0.914] – 1)*100) in October 2008 to 47.4 percent ((exp[-0.642] – 1)*100) in October 2009 when using formal registration of the enterprise as the informality measure, the adjusted gap only decreases from 26.9 percent to 26.4 percent. In turn, this seem to indicate the presence of a strong—and relatively constant—"core" of disadvantage pertaining to informality in Serbia. Third, in line with previous research, there are substantial returns to education, all industries experience a positive earnings premium relative to the reference category of agriculture, and similarly all occupations experience a positive earnings premium relative to the reference category of elementary occupations, workers in urban areas experience (mostly) a positive earnings premium relative to workers from rural areas, and workers from regions outside that of the capital (Belgrade) experience a negative earnings premium.

Lastly, while the many results in Tables C1 and C2 make it hard to assess this precisely, the overall impression from the fully interacted model is that informal sector workers receive negative premiums to many of their observable characteristics.

In essence, the decomposition analysis—to which I now turn—formalizes and condenses the overwhelming results from Tables C1 and C2 (and B and B2) into more easily interpretable numbers.

(B) Overall Earnings Decompositions:

Tables 2 and 3 present the overall earnings decompositions for the four alternative informality measures across the pre- and post crisis surveys.

Starting with the three-fold decomposition (Table 2) a couple of results stand out particularly strongly. First, the endowments increase the formal-informal sector earnings gap overall, indicating that informal sector workers have relatively less favorable observable characteristics—that is, they are concentrated in worse paying sectors, have less education, and so on (this will be examined more closely when considering the detailed decompositions in the next sub-section). Second, the returns to characteristics increase the gaps in both substantive and statistical terms, indicating that formal sector workers have higher returns to characteristics overall. Notably, these results are fairly robust to whether the decomposition is performed from the informal sector's viewpoint (i.e., using formal sector endowments and returns) or whether the decomposition is performed from the formal sector's viewpoint (i.e., using informal sector

endowments and returns), except for the case of the no labor contract informality measure for October 2009, where the returns help decreasing the earnings gap.

Moving to the two-fold decompositions, informal sector workers on average have worse employment-related characteristics as indicated by the positive sign in the explained part—which in turn serves to increase the overall earnings gap—whereas the unexplained part (capturing all the factors that cannot be attributed to differences in observed worker characteristics) accounts for a smaller, though in many cases still sizable—sometimes an even increasing—share of the formal-informal sector earnings differential (Table 3).

Table 2. Overall Earnings Decompositions Using Four Alternative Informality Measures and Two Alternative Decompositions: Three-fold (October 2008 and October 2009)

	October 2008				*October 2009*			
	(1) Not formally registered	*(2) No labor contract*	*(3) No benefits*	*(4) Micro-firms*	*(1) Not formally registered*	*(2) No labor contract*	*(3) No benefits*	*(4) Micro-firms*
(i) Decomposition from the informal sector's viewpoint – i.e., using formal sector endowments and returns:								
Endowments	0.764***	0.479***	0.413***	0.164***	0.546***	0.685***	0.295***	0.147***
	[0.012]	[0.004]	[0.004]	[0.001]	[0.007]	[0.005]	[0.004]	[0.001]
Coefficients	0.362***	0.342***	0.381***	0.116***	0.334***	0.236***	0.169***	0.118***
	[0.004]	[0.003]	[0.003]	[0.001]	[0.004]	[0.003]	[0.002]	[0.001]
Interaction	-0.211***	-0.156***	-0.151***	-0.025***	-0.237***	-0.397***	-0.008**	-0.049***
	[0.012]	[0.004]	[0.004]	[0.001]	[0.007]	[0.005]	[0.004]	[0.001]
(ii) Decomposition from the formal sector's viewpoint – i.e., using informal sector endowments and returns:								
Endowments	0.553***	0.323***	0.262***	0.138***	0.308***	0.288***	0.287***	0.098***
	[0.003]	[0.002]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]
Coefficients	0.151***	0.186***	0.230***	0.091***	0.096***	-0.162***	0.161***	0.069***
	[0.011]	[0.004]	[0.003]	[0.001]	[0.006]	[0.004]	[0.004]	[0.001]
Interaction	0.211***	0.156***	0.151***	0.025***	0.237***	0.397***	0.008**	0.049***
	[0.012]	[0.004]	[0.004]	[0.001]	[0.007]	[0.005]	[0.004]	[0.001]
N	2,783	2,783	2,783	2,783	2,577	2,577	2,577	2,577

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors. *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 and October 2009 Rounds).

Table 3. Overall Earnings Decompositions Using Four Alternative Informality Measures: Two-fold (October 2008 and October 2009)

	October 2008						*October 2009*					
	Weight given to formal sector relative to informal sector / regression model used in determining the reference coefficients for decompositions:											
	0	*1*	*0.5*	*Share formal*	*Pooled, excl. group dummy*	*Pooled, incl. group dummy*	*0*	*1*	*0.5*	*Share formal*	*Pooled, excl. group dummy*	*Pooled, incl. group dummy*
(1) Not formally registered:												
Explained	0.764***	0.553***	0.658***	0.560***	0.676***	0.600***	0.546***	0.308***	0.427***	0.314***	0.393***	0.335***
	[0.012]	[0.003]	[0.007]	[0.003]	[0.003]	[0.003]	[0.007]	[0.002]	[0.004]	[0.002]	[0.003]	[0.003]
Unexplained	0.151***	0.362***	0.256***	0.355***	0.238***	0.314***	0.096***	0.334***	0.215***	0.328***	0.249***	0.307***
	[0.011]	[0.004]	[0.006]	[0.004]	[0.003]	[0.004]	[0.006]	[0.004]	[0.004]	[0.004]	[0.003]	[0.004]
(2) No labor contract:												
Explained	0.479***	0.323***	0.401***	0.338***	0.518***	0.448***	0.685***	0.288***	0.486***	0.312***	0.381***	0.337***
	[0.004]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.005]	[0.001]	[0.002]	[0.001]	[0.002]	[0.002]
Unexplained	0.186***	0.342***	0.264***	0.326***	0.146***	0.217***	-0.162***	0.236***	0.037***	0.212***	0.142***	0.187***
	[0.004]	[0.003]	[0.002]	[0.003]	[0.002]	[0.002]	[0.004]	[0.003]	[0.003]	[0.003]	[0.002]	[0.002]
(3) No benefits:												
Explained	0.413***	0.262***	0.338***	0.279***	0.479***	0.406***	0.295***	0.287***	0.291***	0.288***	0.346***	0.316***
	[0.004]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.004]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Unexplained	0.230***	0.381***	0.305***	0.364***	0.164***	0.237***	0.161***	0.169***	0.165***	0.169***	0.111***	0.140***
	[0.003]	[0.003]	[0.002]	[0.003]	[0.001]	[0.002]	[0.004]	[0.002]	[0.003]	[0.002]	[0.002]	[0.002]
(4) Micro-firms:												
Explained	0.164***	0.138***	0.151***	0.145***	0.157***	0.150***	0.147***	0.098***	0.122***	0.109***	0.116***	0.109***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Unexplained	0.091***	0.116***	0.103***	0.110***	0.097***	0.105***	0.069***	0.118***	0.093***	0.107***	0.100***	0.107***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
N	2,783	2,783	2,783	2,783	2,783	2,783	2,577	2,577	2,577	2,577	2,577	2,577

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors. The references for the various weights/regression models used in determining the reference coefficients for the decompositions are as follows: 0 (Oaxaca, 1973); 1 (Oaxaca, 1973; Blinder, 1973); 0.5 (Reimers, 1983); share of formal sector (Cotton, 1988); pooled, excl. group dummy (Neumark, 1988); and pooled, incl. group dummy (Jann, 2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 and October 2009 Rounds).

In turn, this is indicative of the presence of what in studies of gender and ethnic earnings differentials has been termed "discrimination" towards informal sector workers—which is here instead suggested to be interpreted as reflecting non-observable characteristics of informal sector workers such as relatively lower bargaining power and less access to personal and professional networks. Notably, the relative shares of the explained and the unexplained parts of the formal-informal sector earnings gap has changed from pre- to post crisis in several cases, so that in many cases, post-crisis a relatively larger share of the overall is accounted for by the unexplained part of the gap—in turn indicating that "discrimination" (or at least the importance of informal sector workers' lower bargaining power and less access to personal and professional networks) has increased following the onset of the Financial Crisis.

But how are the overall gaps—both two- and three-fold—explained by the endowment of and returns to the separate individual characteristics (or groups of characteristics), rather than by the endowment of and returns to individual characteristics *overall*? This is the object of the final empirical analysis—the detailed earnings decompositions—following next.

(C) Detailed Earnings Decompositions:

While the overall earnings decompositions examined in the previous section already add to the story about the nature of the formal-informal sector gap in Serbia established in its "raw" form in Table 1, additional insights may be had from going one step further and additionally decompose these overall decompositions into the contribution coming from the individual explanatory variables from the Mincer earnings regressions—which, again, can be done both for the two- and three-fold decompositions. To help better facilitate interpretation, however, results are reported in groups of individual variables (e.g. aggregating up the contribution from all the education variables), rather than in terms of all the individual variables.

The results from the detailed three-fold decompositions (Tables D1-D4, Appendix D) reveal that many of the observable characteristics work to widen the formal-informal sector gap rather than to narrow it. Most notably, education and part-time status are the two consistently most important factors across all four informality measures and both time periods. For example, using registration status of firms as the informality measure, education and part-time status are each associated with about a 37 percentage-points widening of the earnings gap in October 2008 (both using formal sector endowments and returns as the benchmark for the calculations).

The results from the detailed two-fold decompositions are mostly consistent with the results for the detailed three-fold decompositions (Tables E1-E4, Appendix E), so that education and part-time status again are the most consistently important contributors to widening the formal-informal sector earnings gap across all four informality measures.

5. Conclusion

This paper examines the formal-informal sector earnings gap in terms of its prevalence, magnitude, and determinants using a recent Labor Force Survey collected in Serbia over a period roughly spanning the first year of the International Financial Crisis using identical survey instruments and thereby adds to the emerging literature on the informal sector, including the formal-informal sector earnings gap, for the former Socialist economies.

Estimation of raw formal-informal sector earnings gaps and overall and detailed earnings decompositions leads to seven main results: (1) the presence of a substantively large formal-informal sector gap (favoring the formal sector); (2) the gap appears to have decreased substantially overall, following the Crisis (though with some variation across informality measures); (3) however, when controlling for observable characteristics, the gap has not really changed that much following the Crisis—in turn indicating persistency in the gap once observable characteristics have been controlled for arising from changes in the composition of the informal sector following the Crisis, whereby workers with relatively more favorable characteristics are now "pushed" into informality; (4) both endowments and the returns to characteristics increase the earnings gap—indicating that formal sector workers are concentrated in better paying industries and occupations, have more education, and so on, and at the same time also have higher returns to their (already favorable) characteristics overall; (5) while observed individual characteristics explain part of the earnings gaps, a substantial part of the gap is left unexplained; (6) the unexplained part of the gap appears to have increased with the onset of the Crisis in many cases, thus indicating a worsening in the earnings position of informal sector workers that is not attributable to their observable characteristics; (7) pursuing detailed decompositions of the formal-informal earnings gap indicates that education and part-time status consistently are among the main drivers of the observed gap across the different alternative specifications of the two-and three fold decompositions.

These results have strong policy implications, consistent as they are with the presence of

what in studies of gender and ethnic earnings differentials has been termed "discrimination" towards informal sector workers—which is here interpreted as reflecting non-observable characteristics of informal sector workers such as relatively lower bargaining power and access to personal and professional networks—but at the same time also point towards the importance of continued attention towards, among other factors, the education system as a potentially important vehicle for decreasing the formal-informal earnings gap in Serbia and, perhaps, in transition economies more generally. Additionally, the results—in conjunction with the previous research reviewed here (though especially Koettl, 2010)—implicitly highlight the importance of improvements in the regulatory environment, since employment creation and, ultimately, economy wide economic growth, may be severely dampened with the continued presence of the rigid structures in this environment, especially in the labor market.

Hence, future policy might want to consider also not only the equality of wages once working but also try to ensure equal opportunities for workers to become employed in the first place. Such policy interventions might include increased support and programs to workers, as well as re- and up-skilling of workers.

In terms of future research, even with the evidence emerging in recent years we are only beginning to start to get a grasp of the prevalence and the nature of the formal-informal sector earnings gap in the former socialist economies in Eastern Europe and Central Asia. Even more research is needed, especially if we want to go into the "black box" of what determines the earnings gap in terms of causal pathways. Crucial for these efforts, however, is the availability—and therefore collection—of more and better data.

The data examined here is a case in point. While it is certainly commendable—and very useful—to collect data using identical questionnaires across several periods it is a shame that such a potentially important variable as union membership, for example, is not collected. An additional limitation of this dataset was the somewhat small survey sample sizes for some of the informality measures used here. In turn, these comments may well serve as a warning to national and international agencies in charge of future data collection for analysis of the informal sector, including the nature of the formal-informal sector earnings gap.

References:

Babović, Marija (2008) "The Position of Women on the Labour Market in Serbia," Belgrade: Gender Equality Council, Government of the Republic of Serbia and United Nations Development Programme, Serbia.

Blinder, A.S. (1973) "Wage Discrimination: Reduced Form and Structural Estimates," *Journal of Human Resources* 8: 436-455.

Blunch, Niels-Hugo, Sudharshan Canagarajah and Dhushyanth Raju (2001) "The Informal Sector Revisited: A Synthesis across Space and Time," Social Protection Discussion Paper No. 0119, Human Development Network, World Bank, Washington, D.C.

Cotton, J. (1988) "On the Decomposition of Wage Differentials," *Review of Economics and Statistics* 70: 236-243.

Fields, Gary S. (2007) "Employment in Low-Income Countries: Beyond Labor Market Segmentation?" in: Pierella Paci and Pieter Serneels (Eds.) *Employment and Shared Growth: Rethinking the Role of Labor Mobility for Development (Directions in Development),* Washington, DC: World Bank Publications.

Hart, K. (1971), "Informal Income Opportunities and Urban Employment in Ghana," in: R. Jolly et al. (eds.): *Third World Employment: Problems and Strategy,* Harmondsworth: Penguin.

Huber, P. J. (1967) "The Behavior of Maximum Likelihood Estimates under Nonstandard Conditions," in: Lucien M. Le Cam and Jerzy Neyman (Eds.) *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability Vol. 1,* Berkeley, CA: University of California Press.

Jann, Ben (2008) "The Blinder-Oaxaca decomposition for linear regression models," *The Stata Journal* 8(4): 453-479.

Kanbur, Ravi (2009) "Conceptualising Informality: Regulation and Enforcement," *Indian Journal of Labour Economics* 52(1): 33-42.

Kennedy, Peter E. (1981) "Estimation with Correctly Interpreted Dummy Variables in Semilogarithmic Equations," *American Economic Review,* 71(4): 801.

Kogan, Irena (2011) "When informal is normal... On the role of credentials and contacts for the job entry in Serbia," *Research in Social Stratification and Mobility, forthcoming*.

Koettl, Johannes (2010) "Does formal work pay in Serbia? The role of labor taxes and social benefit design in providing disincentives for formal work," Technical Note, Washington, DC: World Bank.

Lehmann, Hartmut (2010) "Policies to Combat Informality and to Broaden the Tax Base: Lessons for Transition Countries," Background paper to a World Bank project on informality in the Balkans, Department of Economics, University of Bologna.

Macias, Victor (2009) "Informal Employment: The Case of Bosnia and Herzegovina, Macedonia and Serbia," Background Paper, Human Development Sector Unit, Europe and Central Asia Region, Washington, DC: World Bank

Neumark, D. (1988) "Employers' Discriminatory Behavior and the Estimation of Wage

Discrimination," *Journal of Human Resources* 23: 279-295.
Oaxaca, R. (1973) "Male-Female Wage Differentials in Urban Labor Markets," *International Economic Review* 14: 693-709.
Oaxaca, R.L., Ransom, M.R. (1998) "Calculation of approximate variances for wage Decomposition differentials," *Journal of Economic and Social Measurement* 24: 55-61.
Oaxaca, R.L. and M.R. Ransom (1999) "Identification in Detailed Wage Decompositions," *Review of Economics and Statistics* 81: 154-157.
OECD (2008) *Serbia: A Labour Market in Transition*, Paris: Organization for Economic Co-operation and Development (OECD).
Perry, G., W. Maloney, O. Arias, P. Fajnzylber, A. Mason, J. Saavedra-Chanduvi (2006, eds.), *Informality: Exit and Exclusion*, World Bank Latin America and Caribbean Studies.
Ruffer, T. and J. Knight (2007) "Informal Sector Labor Markets in Developing Countries," University of Oxford.
Söderbom, Måns and Francis Teal (2004) "Size and Efficiency in African Manufacturing Firms: Evidence from Firm-Level Panel Data," *Journal of Development Economics* 73(1): 369-394.
Reimers, C.W. (1983) "Labor Market Discrimination against Hispanic and Black Men," *Review of Economics and Statistics* 65: 570-579.
White, H. (1980) "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity," *Econometrica* 48(4):817–830.
Yun, Myeong-Su (2005) "A Simple Solution to the Identification Problem in Detailed Wage Decompositions," *Economic Inquiry* 43: 766-772.

APPENDIX A: Variable Definitions

Table A1. Variable Definitions

Variable name:	*Definition:*
Dependent variable:	
Log real earnings (Oct. 2008, Oct. 2009)	Log real earnings
Informality measures:	
Unregistered firm	1 if firm is not formally registered (for tax purposes, etc); 0 otherwise
No labor contract	1 if worker has no labor contract; 0 otherwise
No benefits	1 if worker does not receive health and pension benefits; 0 otherwise
Micro firm	1 if firm employs 5 workers or less; 0 otherwise
Explanatory variables:	
Birth cohorts:	
15-24 (reference)	1 if in age range; 0 otherwise
25-34	1 if in age range; 0 otherwise
35-44	1 if in age range; 0 otherwise
45-54	1 if in age range; 0 otherwise
55-64	1 if in age range; 0 otherwise
65 and above	1 if in age range; 0 otherwise
Educational attainment:	
Primary or less (reference)	1 if completed primary or less; 0 otherwise
Secondary	1 if completed secondary; 0 otherwise
Tertiary	1 if completed tertiary; 0 otherwise
Part-time status:	
Part-time	1 if part-time; 0 otherwise
Industry:	
Agriculture (reference)	1 if Agriculture; 0 otherwise
Man/Min/Electricity	1 if Manufacturing-Mining-Electricity; 0 otherwise
Construction	1 if Construction; 0 otherwise
Trade/Services	1 if Trade/Services; 0 otherwise
Hotels/Restaurants	1 if Hotels/Restaurants; 0 otherwise
Transports	1 if Transports; 0 otherwise
Finance/Real estate	1 if Finance/Real Estate; 0 otherwise
Public sector	1 if Public Sector; 0 otherwise
Other	1 if Other Sector; 0 otherwise
Occupation:	

Legislators	1 if Legislator; 0 otherwise
Professionals	1 if Professional; 0 otherwise
Technicians	1 if Technician; 0 otherwise
Clerks	1 if Clerk; 0 otherwise
Service	1 if Service; 0 otherwise
Skilled agric & fishery	1 if Skilled agric & fishery; 0 otherwise
Craft & trade	1 if Craft & trade; 0 otherwise
Plant/machine operators	1 if Plant/machine operator; 0 otherwise
Elementary occupations (reference)	1 if Elementary occupation; 0 otherwise
Firm Size:	
Firm size 1-5 (reference)	1 if firm size is 1-5; 0 otherwise
Firm size 6-19	1 if firm size is 6-19; 0 otherwise
Firm size 20-99	1 if firm size is 20-99; 0 otherwise
Firm size 100+	1 if firm size is 100 or more; 0 otherwise
Firm size not sure: 10 or less	1 if not sure about firm size but it is 10 or less; 0 otherwise
Firm size not sure: 11 or more	1 if not sure about firm size but it is 11 or more; 0 otherwise
Geographical location:	
Urban	1 if urban; 0 if rural
Central Serbia	1 if Central Serbia; 0 otherwise
Belgrade (reference)	1 if Belgrade; 0 otherwise
Vojvodina	1 if Vojvodina; 0 otherwise

APPENDIX B: Descriptive Statistics for Estimation Samples

Table B1. Means and Standard Deviations of Monthly Earnings and Explanatory Variables by Formality Status Using Four Alternative Informality Measures: October 2008

	(1) Formally registered?		*(2) Has labor contract?*		*(3) Receives benefits?*		*(4) Non-Micro-firm?*	
	Yes	No	Yes	No	Yes	No	Yes	No
Ln Monthly earnings	10.067	9.204	10.102	9.456	10.108	9.482	10.099	9.853
	[0.528]	[0.823]	[0.496]	[0.762]	[0.493]	[0.736]	[0.529]	[0.612]
Informality measure:								
Unregistered firm	0.000	1.000	0.002	0.311	0.002	0.273	0.015	0.084
	[0.000]	[0.000]	[0.046]	[0.464]	[0.046]	[0.446]	[0.123]	[0.277]
No labor contract	0.069	0.94	0.000	1.000	0.002	0.863	0.066	0.19
	[0.253]	[0.239]	[0.000]	[0.000]	[0.045]	[0.345]	[0.249]	[0.393]
No benefits	0.082	0.94	0.017	0.981	0.000	1.000	0.076	0.215
	[0.275]	[0.239]	[0.128]	[0.135]	[0.000]	[0.000]	[0.265]	[0.411]
Micro firm (five or less)	0.23	0.636	0.218	0.479	0.214	0.476	0.000	1.000
	[0.421]	[0.484]	[0.413]	[0.500]	[0.410]	[0.500]	[0.000]	[0.000]
Age cohort:								
15-24	0.077	0.254	0.067	0.224	0.066	0.215	0.069	0.125
	[0.266]	[0.438]	[0.250]	[0.418]	[0.248]	[0.411]	[0.253]	[0.331]
25-34	0.242	0.233	0.239	0.27	0.239	0.268	0.231	0.278
	[0.429]	[0.425]	[0.427]	[0.445]	[0.427]	[0.444]	[0.421]	[0.448]
35-44	0.268	0.174	0.268	0.232	0.267	0.245	0.272	0.244
	[0.443]	[0.381]	[0.443]	[0.423]	[0.443]	[0.431]	[0.445]	[0.430]
45-54	0.274	0.217	0.285	0.154	0.287	0.151	0.285	0.232
	[0.446]	[0.414]	[0.451]	[0.361]	[0.452]	[0.359]	[0.451]	[0.422]
55-64	0.137	0.107	0.139	0.11	0.139	0.112	0.141	0.118
	[0.344]	[0.311]	[0.346]	[0.313]	[0.346]	[0.316]	[0.349]	[0.323]
65+	0.002	0.015	0.002	0.01	0.002	0.009	0.003	0.002
	[0.048]	[0.123]	[0.044]	[0.100]	[0.044]	[0.094]	[0.054]	[0.045]
Educational attainment:								
Primary or less	0.143	0.556	0.123	0.461	0.124	0.415	0.144	0.193
	[0.350]	[0.500]	[0.329]	[0.499]	[0.330]	[0.494]	[0.351]	[0.395]
Secondary	0.668	0.429	0.678	0.503	0.678	0.523	0.651	0.692
	[0.471]	[0.498]	[0.467]	[0.501]	[0.467]	[0.500]	[0.477]	[0.462]
Tertiary	0.189	0.015	0.199	0.037	0.198	0.062	0.205	0.115
	[0.391]	[0.123]	[0.399]	[0.188]	[0.399]	[0.241]	[0.404]	[0.320]
Part-time	0.02	0.313	0.013	0.182	0.011	0.183	0.021	0.058
	[0.141]	[0.466]	[0.115]	[0.387]	[0.104]	[0.387]	[0.142]	[0.234]
Industry:								
Agriculture	0.045	0.402	0.035	0.252	0.035	0.227	0.05	0.073
	[0.206]	[0.493]	[0.184]	[0.435]	[0.183]	[0.420]	[0.219]	[0.261]
Man/Min/Electricity	0.351	0.091	0.364	0.144	0.364	0.176	0.377	0.238
	[0.477]	[0.290]	[0.481]	[0.351]	[0.481]	[0.381]	[0.485]	[0.426]
Construction	0.103	0.409	0.088	0.341	0.09	0.293	0.11	0.12
	[0.304]	[0.495]	[0.284]	[0.475]	[0.287]	[0.456]	[0.313]	[0.326]
Trade/Services	0.134	0.047	0.131	0.131	0.13	0.139	0.102	0.222
	[0.340]	[0.212]	[0.337]	[0.338]	[0.336]	[0.347]	[0.302]	[0.416]
Hotels/Restaurants	0.03	0	0.025	0.06	0.025	0.058	0.024	0.043
	[0.170]	[0.000]	[0.158]	[0.239]	[0.157]	[0.234]	[0.154]	[0.204]
Transports	0.09	0.037	0.095	0.022	0.097	0.019	0.084	0.102
	[0.286]	[0.191]	[0.294]	[0.147]	[0.296]	[0.138]	[0.277]	[0.303]

Finance/Real estate	0.047	0.000	0.049	0.014	0.048	0.026	0.044	0.05
	[0.212]	[0.000]	[0.216]	[0.119]	[0.214]	[0.161]	[0.205]	[0.218]
Public sector	0.148	0.000	0.158	0.000	0.159	0.011	0.16	0.089
	[0.355]	[0.000]	[0.365]	[0.000]	[0.366]	[0.106]	[0.367]	[0.285]
Other	0.053	0.013	0.054	0.036	0.052	0.049	0.049	0.061
	[0.224]	[0.113]	[0.225]	[0.186]	[0.222]	[0.217]	[0.216]	[0.239]
Occupation:								
Legislators	0.043	0.000	0.046	0.000	0.047	0.000	0.049	0.018
	[0.203]	[0.000]	[0.210]	[0.000]	[0.211]	[0.000]	[0.217]	[0.133]
Professionals	0.106	0.000	0.113	0.006	0.113	0.02	0.117	0.058
	[0.309]	[0.000]	[0.317]	[0.076]	[0.317]	[0.140]	[0.322]	[0.235]
Technicians	0.142	0.013	0.149	0.033	0.148	0.06	0.14	0.132
	[0.349]	[0.113]	[0.357]	[0.179]	[0.355]	[0.238]	[0.347]	[0.339]
Clerks	0.069	0.053	0.073	0.029	0.073	0.037	0.069	0.068
	[0.254]	[0.225]	[0.261]	[0.169]	[0.260]	[0.188]	[0.254]	[0.252]
Service	0.13	0.000	0.127	0.119	0.126	0.125	0.109	0.178
	[0.336]	[0.000]	[0.333]	[0.325]	[0.332]	[0.331]	[0.312]	[0.383]
Skilled agric & fishery	0.007	0.09	0.004	0.061	0.004	0.053	0.005	0.023
	[0.082]	[0.288]	[0.062]	[0.239]	[0.063]	[0.225]	[0.070]	[0.151]
Craft & trade	0.252	0.325	0.249	0.3	0.25	0.289	0.257	0.246
	[0.434]	[0.471]	[0.433]	[0.459]	[0.433]	[0.454]	[0.437]	[0.431]
Plant/machine operators	0.156	0.025	0.16	0.081	0.161	0.076	0.154	0.144
	[0.363]	[0.157]	[0.366]	[0.273]	[0.368]	[0.266]	[0.361]	[0.352]
Elementary occupations	0.094	0.494	0.078	0.371	0.078	0.339	0.099	0.131
	[0.292]	[0.503]	[0.269]	[0.484]	[0.268]	[0.474]	[0.298]	[0.338]
Firm Size:								
Firm size 1-5	0.23	0.636	0.218	0.479	0.214	0.476	0.000	1.000
	[0.421]	[0.484]	[0.413]	[0.500]	[0.410]	[0.500]	[0.000]	[0.000]
Firm size 6-19	0.294	0.237	0.29	0.31	0.29	0.313	0.386	0.000
	[0.456]	[0.427]	[0.454]	[0.463]	[0.454]	[0.464]	[0.487]	[0.000]
Firm size 20-99	0.241	0.061	0.251	0.09	0.254	0.084	0.311	0.000
	[0.428]	[0.240]	[0.434]	[0.286]	[0.435]	[0.278]	[0.463]	[0.000]
Firm size 100+	0.17	0	0.181	0.012	0.181	0.032	0.217	0.000
	[0.376]	[0.000]	[0.385]	[0.111]	[0.385]	[0.175]	[0.413]	[0.000]
Firm size not sure: 10 or less	0.018	0.022	0.013	0.065	0.013	0.057	0.023	0.000
	[0.131]	[0.148]	[0.112]	[0.248]	[0.112]	[0.233]	[0.151]	[0.000]
Firm size not sure: 11 or more	0.047	0.044	0.048	0.043	0.048	0.038	0.062	0.000
	[0.212]	[0.207]	[0.213]	[0.204]	[0.214]	[0.191]	[0.242]	[0.000]
Geographical location:								
Urban	0.624	0.31	0.634	0.423	0.633	0.458	0.63	0.564
	[0.484]	[0.465]	[0.482]	[0.495]	[0.482]	[0.499]	[0.483]	[0.496]
Central Serbia	0.502	0.295	0.504	0.421	0.507	0.406	0.499	0.487
	[0.500]	[0.459]	[0.500]	[0.495]	[0.500]	[0.492]	[0.500]	[0.500]
Belgrade	0.217	0.085	0.223	0.123	0.221	0.153	0.219	0.196
	[0.413]	[0.281]	[0.416]	[0.329]	[0.415]	[0.360]	[0.413]	[0.397]
Vojvodina	0.28	0.62	0.274	0.455	0.273	0.441	0.283	0.317
	[0.449]	[0.488]	[0.446]	[0.499]	[0.445]	[0.497]	[0.450]	[0.466]
N	2,691	89	2,507	273	2,474	306	2,114	666

Notes: Estimations incorporate sampling weights.
Source: Serbia Labor Force Survey (October 2008 Round).

Table B2. Means and Standard Deviations of Monthly Earnings and Explanatory Variables by Formality Status Using Four Alternative Informality Measures: October 2009

	(1) Formally registered?		*(2) Has labor contract?*		*(3) Receives benefits?*		*(4) Non-Micro-firm?*	
	Yes	No	Yes	No	Yes	No	Yes	No
Ln Monthly earnings	10.079	9.437	10.096	9.572	10.093	9.637	10.114	9.898
	[0.501]	[0.693]	[0.493]	[0.605]	[0.501]	[0.552]	[0.503]	[0.525]
Informality measure:								
Unregistered firm	0.000	1.000	0.006	0.315	0.009	0.254	0.013	0.063
	[0.000]	[0.000]	[0.076]	[0.466]	[0.094]	[0.437]	[0.114]	[0.242]
No labor contract	0.043	0.781	0.000	1	0.013	0.762	0.041	0.127
	[0.203]	[0.417]	[0.000]	[0.000]	[0.113]	[0.427]	[0.199]	[0.333]
No benefits	0.049	0.663	0.016	0.802	0.000	1.000	0.043	0.133
	[0.216]	[0.476]	[0.127]	[0.399]	[0.000]	[0.000]	[0.204]	[0.340]
Micro firm (five or less)	0.223	0.589	0.216	0.481	0.215	0.482	0.000	1.000
	[0.417]	[0.496]	[0.412]	[0.501]	[0.411]	[0.501]	[0.000]	[0.000]
Age cohort:								
15-24	0.064	0.112	0.058	0.179	0.056	0.202	0.058	0.089
	[0.245]	[0.317]	[0.233]	[0.385]	[0.229]	[0.403]	[0.233]	[0.285]
25-34	0.235	0.134	0.229	0.302	0.23	0.275	0.226	0.257
	[0.424]	[0.343]	[0.420]	[0.460]	[0.421]	[0.448]	[0.418]	[0.437]
35-44	0.266	0.318	0.27	0.235	0.271	0.216	0.27	0.258
	[0.442]	[0.469]	[0.444]	[0.425]	[0.445]	[0.413]	[0.444]	[0.438]
45-54	0.28	0.308	0.288	0.18	0.289	0.171	0.288	0.258
	[0.449]	[0.465]	[0.453]	[0.386]	[0.453]	[0.377]	[0.453]	[0.438]
55-64	0.15	0.112	0.153	0.092	0.151	0.12	0.153	0.134
	[0.357]	[0.317]	[0.360]	[0.291]	[0.358]	[0.326]	[0.361]	[0.341]
65+	0.004	0.017	0.004	0.011	0.003	0.017	0.005	0.003
	[0.063]	[0.129]	[0.062]	[0.105]	[0.058]	[0.129]	[0.069]	[0.053]
Educational attainment:								
Primary or less	0.125	0.371	0.113	0.399	0.114	0.371	0.122	0.159
	[0.330]	[0.487]	[0.317]	[0.491]	[0.318]	[0.484]	[0.328]	[0.366]
Secondary	0.668	0.563	0.671	0.583	0.671	0.584	0.651	0.716
	[0.471]	[0.500]	[0.470]	[0.495]	[0.470]	[0.494]	[0.477]	[0.451]
Tertiary	0.207	0.066	0.216	0.018	0.215	0.045	0.227	0.126
	[0.405]	[0.250]	[0.411]	[0.132]	[0.411]	[0.209]	[0.419]	[0.332]
Part-time	0.013	0.297	0.01	0.183	0.01	0.167	0.016	0.034
	[0.114]	[0.460]	[0.097]	[0.388]	[0.100]	[0.374]	[0.126]	[0.181]
Industry:								
Agriculture	0.036	0.313	0.033	0.194	0.032	0.203	0.037	0.063
	[0.186]	[0.467]	[0.179]	[0.396]	[0.175]	[0.403]	[0.188]	[0.243]
Man/Min/Electricity	0.346	0.163	0.354	0.137	0.35	0.206	0.371	0.243
	[0.476]	[0.372]	[0.478]	[0.345]	[0.477]	[0.405]	[0.483]	[0.429]
Construction	0.08	0.315	0.072	0.301	0.075	0.251	0.089	0.075
	[0.272]	[0.468]	[0.258]	[0.460]	[0.263]	[0.435]	[0.285]	[0.263]
Trade/Services	0.13	0.048	0.129	0.121	0.129	0.118	0.098	0.229
	[0.337]	[0.216]	[0.335]	[0.327]	[0.335]	[0.323]	[0.297]	[0.421]
Hotels/Restaurants	0.028	0	0.026	0.054	0.026	0.047	0.025	0.034
	[0.165]	[0.000]	[0.158]	[0.226]	[0.159]	[0.211]	[0.157]	[0.182]
Transports	0.109	0.015	0.111	0.043	0.112	0.035	0.106	0.111
	[0.312]	[0.123]	[0.314]	[0.203]	[0.315]	[0.185]	[0.307]	[0.314]
Finance/Real estate	0.049	0.043	0.051	0.025	0.049	0.047	0.046	0.059
	[0.217]	[0.204]	[0.220]	[0.157]	[0.217]	[0.213]	[0.210]	[0.235]
Public sector	0.168	0	0.174	0.004	0.174	0.015	0.175	0.126

	[0.374]	[0.000]	[0.379]	[0.066]	[0.379]	[0.124]	[0.380]	[0.332]
Other	0.054	0.103	0.051	0.122	0.053	0.078	0.053	0.061
	[0.225]	[0.306]	[0.219]	[0.328]	[0.225]	[0.269]	[0.224]	[0.239]
Occupation:								
Legislators	0.044	0.000	0.046	0.000	0.045	0.006	0.047	0.03
	[0.205]	[0.000]	[0.209]	[0.000]	[0.208]	[0.077]	[0.211]	[0.172]
Professionals	0.115	0.057	0.121	0.000	0.12	0.017	0.133	0.052
	[0.319]	[0.233]	[0.326]	[0.000]	[0.326]	[0.129]	[0.339]	[0.221]
Technicians	0.145	0.067	0.146	0.088	0.148	0.067	0.142	0.144
	[0.352]	[0.251]	[0.353]	[0.285]	[0.355]	[0.251]	[0.349]	[0.351]
Clerks	0.073	0.021	0.073	0.061	0.074	0.044	0.065	0.095
	[0.261]	[0.145]	[0.260]	[0.240]	[0.262]	[0.205]	[0.247]	[0.294]
Service	0.131	0.012	0.129	0.115	0.128	0.126	0.113	0.176
	[0.337]	[0.109]	[0.335]	[0.320]	[0.334]	[0.333]	[0.317]	[0.381]
Skilled agric & fishery	0.008	0.12	0.007	0.067	0.006	0.077	0.006	0.026
	[0.090]	[0.328]	[0.084]	[0.251]	[0.079]	[0.268]	[0.079]	[0.158]
Craft & trade	0.241	0.361	0.24	0.307	0.238	0.33	0.243	0.247
	[0.428]	[0.484]	[0.427]	[0.463]	[0.426]	[0.471]	[0.429]	[0.432]
Plant/machine operators	0.159	0.045	0.162	0.065	0.162	0.065	0.168	0.117
	[0.366]	[0.210]	[0.369]	[0.247]	[0.369]	[0.247]	[0.374]	[0.321]
Elementary occupations	0.084	0.317	0.076	0.296	0.077	0.269	0.083	0.113
	[0.277]	[0.469]	[0.266]	[0.458]	[0.267]	[0.445]	[0.275]	[0.317]
Firm Size:								
Firm size 1-5	0.223	0.589	0.216	0.481	0.215	0.482	0.000	1.000
	[0.417]	[0.496]	[0.412]	[0.501]	[0.411]	[0.501]	[0.000]	[0.000]
Firm size 6-19	0.282	0.229	0.28	0.3	0.283	0.249	0.366	0.000
	[0.450]	[0.424]	[0.449]	[0.459]	[0.451]	[0.434]	[0.482]	[0.000]
Firm size 20-99	0.245	0.038	0.25	0.078	0.25	0.092	0.312	0.000
	[0.430]	[0.192]	[0.433]	[0.269]	[0.433]	[0.289]	[0.463]	[0.000]
Firm size 100+	0.177	0.01	0.183	0.02	0.181	0.06	0.226	0.000
	[0.382]	[0.102]	[0.387]	[0.141]	[0.385]	[0.238]	[0.418]	[0.000]
Firm size not sure: 10 or less	0.018	0.104	0.016	0.09	0.017	0.069	0.026	0.000
	[0.134]	[0.307]	[0.125]	[0.287]	[0.129]	[0.255]	[0.160]	[0.000]
Firm size not sure: 11 or more	0.054	0.03	0.055	0.031	0.054	0.048	0.07	0.000
	[0.227]	[0.173]	[0.228]	[0.175]	[0.226]	[0.215]	[0.255]	[0.000]
Geographical location:								
Urban	0.624	0.411	0.629	0.457	0.629	0.462	0.626	0.594
	[0.485]	[0.496]	[0.483]	[0.500]	[0.483]	[0.500]	[0.484]	[0.491]
Central Serbia	0.49	0.504	0.492	0.475	0.495	0.433	0.491	0.489
	[0.500]	[0.504]	[0.500]	[0.501]	[0.500]	[0.497]	[0.500]	[0.500]
Belgrade	0.251	0.179	0.256	0.149	0.256	0.156	0.259	0.218
	[0.434]	[0.386]	[0.436]	[0.357]	[0.436]	[0.364]	[0.438]	[0.413]
Vojvodina	0.259	0.317	0.252	0.376	0.25	0.411	0.25	0.293
	[0.438]	[0.469]	[0.435]	[0.486]	[0.433]	[0.494]	[0.433]	[0.456]
N	2,510	67	2,411	166	2,403	174	1,970	607

Notes: Estimations incorporate sampling weights.
Source: Serbia Labor Force Survey (October 2009 Round).

APPENDIX C: Mincer Earnings Regressions

Table C1. Mincer Earnings Regressions (OLS) Using Four Alternative Informality Measures: October 2008

	(1) Not formally registered			*(2) No labor contract*			*(3) No benefits*			*(4) Micro-firms*		
	Only informality variable	*Adding controls*	*Adding full set of interactions with informality variable*	*Only informality variable*	*Adding controls*	*Adding full set of interactions with informality variable*	*Only informality variable*	*Adding controls*	*Adding full set of interactions with informality variable*	*Only informality variable*	*Adding controls*	*Adding full set of interactions with informality variable*
IS (Informality measure)	-0.914***	-0.314***	-0.844***	-0.665***	-0.217***	-0.595***	-0.643***	-0.237***	-0.707***	-0.255***	-0.105***	-0.298***
(see defns in Table header)	[0.005]	[0.004]	[0.018]	[0.003]	[0.002]	[0.011]	[0.002]	[0.002]	[0.010]	[0.001]	[0.001]	[0.010]
Birth cohorts:												
25-34		0.191***	0.177***		0.180***	0.171***		0.177***	0.168***		0.196***	0.171***
		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]
35-44		0.225***	0.212***		0.214***	0.221***		0.212***	0.217***		0.235***	0.198***
		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]
45-54		0.229***	0.216***		0.211***	0.200***		0.205***	0.194***		0.241***	0.207***
		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]
55-64		0.244***	0.225***		0.231***	0.214***		0.227***	0.215***		0.252***	0.244***
		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.003]
65+		0.555***	0.485***		0.557***	0.544***		0.553***	0.499***		0.524***	0.556***
		[0.008]	[0.008]		[0.007]	[0.007]		[0.007]	[0.006]		[0.008]	[0.008]
IS X 25-34			-0.188***			0.010*			0.022***			0.073***
			[0.008]			[0.006]			[0.005]			[0.005]
IS X 35-44			-0.245***			-0.094***			-0.054***			0.116***
			[0.011]			[0.007]			[0.006]			[0.005]
IS X 45-54			-0.187***			0.133***			0.056***			0.111***
			[0.009]			[0.007]			[0.006]			[0.005]
IS X 55-64			-0.104***			0.073***			0.075***			-0.014**
			[0.013]			[0.008]			[0.008]			[0.005]
IS X 65+			0.191***			-0.027*			0			-0.379***
			[0.012]			[0.014]			[0.013]			[0.013]
Education:												
Secondary		0.138***	0.123***		0.128***	0.116***		0.127***	0.113***		0.148***	0.189***
		[0.001]	[0.001]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]
Tertiary		0.340***	0.318***		0.333***	0.311***		0.334***	0.318***		0.353***	0.397***
		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]
IS X Secondary			0.281***			0.037***			0.052***			-0.137***
			[0.006]			[0.005]			[0.005]			[0.004]
IS X Tertiary			1.244***			0.019			0.065***			-0.122***
			[0.017]			[0.013]			[0.011]			[0.005]

Part-time status:								
Part-time	-0.642***	-0.497***	-0.642***	-0.285***	-0.619***	-0.115***	-0.723***	-0.612***
	[0.005]	[0.006]	[0.005]	[0.008]	[0.005]	[0.009]	[0.005]	[0.007]
IS X Part-time		-0.710***		-0.530***		-0.683***		-0.211***
		[0.011]		[0.010]		[0.010]		[0.010]
Occupation:								
Legislators	0.657***	0.655***	0.642***	0.577***	0.635***	0.570***	0.676***	0.655***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
Professionals	0.569***	0.569***	0.556***	0.499***	0.552***	0.491***	0.589***	0.532***
	[0.003]	[0.003]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]	[0.003]
Technicians	0.348***	0.340***	0.337***	0.261***	0.335***	0.264***	0.370***	0.318***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Clerks	0.145***	0.138***	0.132***	0.062***	0.130***	0.073***	0.167***	0.167***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Service	0.116***	0.107***	0.110***	0.044***	0.107***	0.051***	0.142***	0.123***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Skilled agric & fishery	0.190***	0.024***	0.206***	0.202***	0.200***	0.179***	0.177***	0.203***
	[0.007]	[0.008]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.010]
Craft & trade	0.178***	0.171***	0.172***	0.088***	0.169***	0.091***	0.194***	0.162***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Plant/machine operators	0.211***	0.203***	0.205***	0.127***	0.200***	0.131***	0.240***	0.195***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
IS X Legislators								-0.126***
								[0.006]
IS X Professionals				-0.531***		0.097***		0.195***
				[0.008]		[0.016]		[0.006]
IS X Technicians				0.194***		0.231***		0.131***
				[0.013]		[0.009]		[0.005]
IS X Clerks		0.775***		0.138***		0.089***		-0.013**
		[0.024]		[0.010]		[0.009]		[0.005]
IS X Service				0.158***		0.091***		0.051***
				[0.009]		[0.008]		[0.005]
IS X Skilled agric & fishery		0.966***		0.095***		0.133***		0.117***
		[0.017]		[0.013]		[0.012]		[0.015]
IS X Craft & trade		-0.049***		0.245***		0.233***		0.098***
		[0.007]		[0.005]		[0.005]		[0.004]
IS X Plant/machine operators		0.034		0.149***		0.100***		0.140***
		[0.028]		[0.008]		[0.009]		[0.005]
Firm Size:								
Firm size 6-19	0.065***	0.061***	0.068***	0.034***	0.064***	0.037***		
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]		
Firm size 20-99	0.093***	0.091***	0.090***	0.067***	0.083***	0.058***		
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]		
Firm size 100+	0.136***	0.133***	0.131***	0.104***	0.126***	0.104***		
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]		
Firm size not sure: 10 or less	-0.084***	-0.103***	-0.036***	-0.029***	-0.039***	-0.034***		
	[0.004]	[0.004]	[0.004]	[0.005]	[0.004]	[0.005]		

Firm size not sure: 11 or more	0.182***	0.178***		0.181***	0.152***		0.174***	0.142***				
	[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]				
IS X Firm size 6-19		-0.051***			0.151***			0.146***				
		[0.009]			[0.004]			[0.004]				
IS X Firm size 20-99		-0.166***			0.210***			0.228***				
		[0.013]			[0.008]			[0.007]				
IS X Firm size 100+		0.486***			0.124***			0.086***				
		[0.040]			[0.009]			[0.009]				
IS X Firm size not sure: 10 or less		0.533***			0.365***			0.345***				
		[0.011]			[0.006]			[0.006]				
IS X Firm size not sure: 11 or more					0.468***			-0.043***				
					[0.007]			[0.010]				
Industry:												
Man/Min/Electricity	0.267***	0.241***		0.264***	0.106***		0.262***	0.101***		0.322***	0.277***	
	[0.003]	[0.003]		[0.003]	[0.003]		[0.003]	[0.003]		[0.003]	[0.003]	
Construction	0.378***	0.333***		0.392***	0.182***		0.388***	0.177***		0.398***	0.370***	
	[0.003]	[0.003]		[0.003]	[0.003]		[0.003]	[0.003]		[0.003]	[0.003]	
Trade/Services	0.184***	0.164***		0.189***	0.028***		0.188***	0.018***		0.224***	0.186***	
	[0.003]	[0.003]		[0.003]	[0.003]		[0.003]	[0.003]		[0.003]	[0.003]	
Hotels/Restaurants	0.153***	0.115***		0.181***	0.018***		0.180***	0.008**		0.190***	0.106***	
	[0.004]	[0.004]		[0.004]	[0.004]		[0.004]	[0.004]		[0.004]	[0.004]	
Transports	0.345***	0.317***		0.338***	0.182***		0.332***	0.168***		0.389***	0.317***	
	[0.003]	[0.003]		[0.003]	[0.003]		[0.003]	[0.003]		[0.003]	[0.003]	
Finance/Real estate	0.254***	0.226***		0.252***	0.084***		0.253***	0.089***		0.297***	0.263***	
	[0.004]	[0.004]		[0.003]	[0.003]		[0.003]	[0.003]		[0.004]	[0.004]	
Public sector	0.325***	0.301***		0.319***	0.161***		0.315***	0.158***		0.382***	0.342***	
	[0.003]	[0.003]		[0.003]	[0.003]		[0.003]	[0.003]		[0.003]	[0.003]	
Other	0.309***	0.275***		0.311***	0.128***		0.312***	0.117***		0.364***	0.370***	
	[0.004]	[0.004]		[0.003]	[0.003]		[0.003]	[0.003]		[0.003]	[0.004]	
IS X Man/Min/Electricity		0.117***			0.346***			0.364***			0.158***	
		[0.016]			[0.008]			[0.007]			[0.008]	
IS X Construction		0.172***			0.382***			0.420***			0.083***	
		[0.009]			[0.006]			[0.006]			[0.008]	
IS X Trade/Services		-0.626***			0.225***			0.351***			0.131***	
		[0.016]			[0.010]			[0.009]			[0.009]	
IS X Hotels/Restaurants					0.250***			0.320***			0.233***	
					[0.012]			[0.010]			[0.011]	
IS X Transports		0.099***			0.150***			0.209***			0.236***	
		[0.016]			[0.010]			[0.010]			[0.008]	
IS X Finance/Real estate					0.324***			0.133***			0.097***	
					[0.013]			[0.009]			[0.009]	
IS X Public sector								-0.161***			0.135***	
								[0.012]			[0.008]	
IS X Other		-0.142***			0.279***			0.356***			-0.051***	
		[0.016]			[0.011]			[0.010]			[0.009]	

Geographical location:												
Urban		-0.001	0.009***		-0.001	0.018***		0	0.019***		-0.001	-0.012***
		[0.001]	[0.001]		[0.001]	[0.001]		[0.001]	[0.001]		[0.001]	[0.001]
Central Serbia		-0.237***	-0.243***		-0.234***	-0.246***		-0.237***	-0.259***		-0.234***	-0.246***
		[0.001]	[0.001]		[0.001]	[0.001]		[0.001]	[0.001]		[0.001]	[0.001]
Vojvodina		-0.165***	-0.162***		-0.164***	-0.149***		-0.165***	-0.161***		-0.164***	-0.152***
		[0.001]	[0.001]		[0.001]	[0.001]		[0.001]	[0.001]		[0.001]	[0.001]
IS X Urban			-0.139***			-0.098***			-0.127***			0.048***
			[0.008]			[0.004]			[0.004]			[0.002]
IS X Central Serbia			0.852***			0.014**			0.090***			0.031***
			[0.017]			[0.006]			[0.005]			[0.003]
IS X Vojvodina			0.539***			-0.194***			-0.071***			-0.053***
			[0.017]			[0.007]			[0.006]			[0.003]
Constant	10.067***	9.303***	9.360***	10.102***	9.339***	9.590***	10.108***	9.357***	9.613***	10.099***	9.308***	9.377***
	[0.001]	[0.004]	[0.005]	[0.001]	[0.004]	[0.004]	[0.001]	[0.004]	[0.004]	[0.001]	[0.004]	[0.005]
R^2	0.08	0.46	0.48	0.12	0.46	0.49	0.13	0.46	0.49	0.04	0.45	0.46
N	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783

Notes: Estimations employ robust Huber-White (Huber, 1967; White, 1980) standard errors and incorporate sampling weights. Reference groups are: "15-24" (age cohorts); "Primary or less" (education completed); "Agriculture" (industry); "Elementary occupations" (occupation); "Firm size 1-5" (firm size); and "Belgrade" (region). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 Round).

Table C2. Mincer Earnings Regressions (OLS) Using Four Alternative Informality Measures: October 2009

	(1) Not formally registered			*(2) No labor contract*			*(3) No benefits*			*(4) Micro-firms*		
	Only informality variable	*Adding controls*	*Adding full set of interactions with informality variable*	*Only informality variable*	*Adding controls*	*Adding full set of interactions with informality variable*	*Only informality variable*	*Adding controls*	*Adding full set of interactions with informality variable*	*Only informality variable*	*Adding controls*	*Adding full set of interactions with informality variable*
IS (Informality measure)	-0.642***	-0.307***	0.069***	-0.524***	-0.187***	0.234***	-0.456***	-0.140***	-0.196***	-0.216***	-0.107***	0.026***
(see defns in Table header)	[0.005]	[0.004]	[0.016]	[0.003]	[0.002]	[0.013]	[0.002]	[0.002]	[0.012]	[0.001]	[0.001]	[0.008]
Birth cohorts:												
25-34		0.073***	0.084***		0.065***	0.089***		0.063***	0.077***		0.080***	0.057***
		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]
35-44		0.141***	0.145***		0.125***	0.159***		0.123***	0.147***		0.143***	0.156***
		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]
45-54		0.158***	0.165***		0.139***	0.168***		0.139***	0.160***		0.162***	0.147***
		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]
55-64		0.108***	0.117***		0.092***	0.124***		0.093***	0.120***		0.116***	0.116***
		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]
65+		0.239***	0.173***		0.226***	0.329***		0.236***	0.329***		0.230***	0.150***
		[0.011]	[0.012]		[0.011]	[0.010]		[0.011]	[0.011]		[0.011]	[0.013]
IS X 25-34			-0.156***			-0.082***			0.063***			0.050***
			[0.014]			[0.007]			[0.006]			[0.003]
IS X 35-44			-0.170***			-0.160***			-0.085***			-0.069***
			[0.008]			[0.006]			[0.006]			[0.003]
IS X 45-54			-0.291***			-0.166***			-0.084***			0.025***
			[0.011]			[0.007]			[0.006]			[0.003]
IS X 55-64			-0.200***			-0.189***			-0.029***			-0.014***
			[0.012]			[0.010]			[0.009]			[0.004]
IS X 65+			0.877***			-1.160***			-0.216***			0.697***
			[0.023]			[0.026]			[0.041]			[0.019]
Education:												
Secondary		0.111***	0.102***		0.099***	0.114***		0.103***	0.104***		0.118***	0.115***
		[0.001]	[0.001]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]
Tertiary		0.310***	0.297***		0.298***	0.304***		0.303***	0.302***		0.318***	0.276***
		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]		[0.002]	[0.002]
IS X Secondary			0.215***			-0.157***			-0.013**			-0.052***
			[0.008]			[0.005]			[0.005]			[0.004]
IS X Tertiary			0.087***			0.646***			0.003			0.075***
			[0.016]			[0.025]			[0.023]			[0.005]
Part-time status:												
Part-time		-0.294***	-0.224***		-0.311***	-0.108***		-0.334***	-0.257***		-0.399***	-0.428***
		[0.004]	[0.004]		[0.004]	[0.005]		[0.004]	[0.006]		[0.004]	[0.005]
IS X Part-time			-0.226***			-0.492***			-0.163***			0.025***

		[0.010]		[0.008]		[0.009]		[0.009]
Occupation:								
Legislators	0.552***	0.563***	0.550***	0.523***	0.553***	0.530***	0.570***	0.606***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
Professionals	0.381***	0.386***	0.376***	0.350***	0.379***	0.357***	0.393***	0.393***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]
Technicians	0.208***	0.221***	0.208***	0.177***	0.211***	0.178***	0.217***	0.215***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Clerks	0.076***	0.078***	0.077***	0.043***	0.078***	0.046***	0.086***	0.101***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]
Service	0.028***	0.038***	0.028***	0.002	0.033***	0.007***	0.043***	0.044***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]
Skilled agric & fishery	-0.070***	-0.002	-0.083***	-0.017***	-0.074***	0	-0.100***	0.026***
	[0.007]	[0.007]	[0.007]	[0.005]	[0.007]	[0.005]	[0.007]	[0.006]
Craft & trade	0.075***	0.080***	0.071***	0.031***	0.075***	0.038***	0.078***	0.082***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Plant/machine operators	0.087***	0.091***	0.082***	0.048***	0.087***	0.057***	0.104***	0.074***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
IS X Legislators						-0.530***		-0.175***
						[0.024]		[0.007]
IS X Professionals		0.397***				-0.771***		0.190***
		[0.030]				[0.022]		[0.006]
IS X Technicians		-0.897***		0.139***		0.307***		0.044***
		[0.024]		[0.010]		[0.011]		[0.004]
IS X Clerks		0.232***		-0.025**		0.222***		-0.019***
		[0.032]		[0.011]		[0.009]		[0.004]
IS X Service		0.057***		-0.128***		0.103***		-0.002
		[0.011]		[0.008]		[0.006]		[0.004]
IS X Skilled agric & fishery		-0.413***		-0.208***		-0.062***		-0.350***
		[0.017]		[0.016]		[0.016]		[0.015]
IS X Craft & trade		0.153***		0.172***		0.191***		-0.021***
		[0.010]		[0.006]		[0.005]		[0.004]
IS X Plant/machine operators		0.160***		0.310***		0.190***		0.188***
		[0.016]		[0.006]		[0.007]		[0.004]
Firm Size:								
Firm size 6-19	0.065***	0.075***	0.068***	0.064***	0.068***	0.055***		
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]		
Firm size 20-99	0.131***	0.135***	0.132***	0.133***	0.135***	0.129***		
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]		
Firm size 100+	0.125***	0.128***	0.125***	0.122***	0.129***	0.126***		
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]		
Firm size not sure: 10 or less	-0.116***	-0.137***	-0.111***	-0.101***	-0.123***	-0.133***		
	[0.004]	[0.004]	[0.004]	[0.005]	[0.004]	[0.004]		
Firm size not sure: 11 or more	0.129***	0.134***	0.128***	0.132***	0.134***	0.130***		
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]		
IS X Firm size 6-19		-0.091***		0.025***		0.112***		
		[0.009]		[0.005]		[0.005]		

IS X Firm size 20-99		0.132***		-0.102***		0.009		
		[0.020]		[0.007]		[0.006]		
IS X Firm size 100+		-0.105***		-0.181***		-0.021**		
		[0.015]		[0.010]		[0.009]		
IS X Firm size not sure: 10 or less		-0.105***		0.223***		0.074***		
		[0.014]		[0.006]		[0.006]		
IS X Firm size not sure: 11 or more		0.929***		0.243***		0.037***		
		[0.027]		[0.009]		[0.008]		
Industry:								
Man/Min/Electricity	0.100***	0.085***	0.106***	0.056***	0.113***	0.069***	0.136***	0.137***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]	[0.002]	[0.003]
Construction	0.160***	0.139***	0.175***	0.121***	0.169***	0.123***	0.166***	0.186***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
Trade/Services	0.049***	0.028***	0.059***	0.012***	0.064***	0.018***	0.068***	0.097***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
Hotels/Restaurants	0.029***	0.010***	0.052***	0.015***	0.053***	0.002	0.041***	0.153***
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
Transports	0.156***	0.142***	0.164***	0.115***	0.168***	0.123***	0.184***	0.209***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
Finance/Real estate	0.076***	0.045***	0.080***	0.036***	0.089***	0.054***	0.097***	0.166***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.004]
Public sector	0.178***	0.165***	0.184***	0.131***	0.190***	0.141***	0.220***	0.266***
	[0.002]	[0.003]	[0.002]	[0.003]	[0.002]	[0.003]	[0.003]	[0.003]
Other	0.010***	0.008***	0.023***	-0.028***	0.020***	-0.043***	0.030***	0.047***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
IS X Man/Min/Electricity		-0.682***		0.161***		0.167***		0.012*
		[0.015]		[0.010]		[0.009]		[0.006]
IS X Construction		-0.249***		0.093***		0.082***		-0.076***
		[0.012]		[0.007]		[0.007]		[0.007]
IS X Trade/Services		0.201***		0.231***		0.165***		-0.083***
		[0.031]		[0.009]		[0.009]		[0.007]
IS X Hotels/Restaurants				0.174***		0.197***		-0.348***
				[0.011]		[0.010]		[0.008]
IS X Transports		-0.506***		0.251***		0.189***		-0.116***
		[0.025]		[0.009]		[0.009]		[0.007]
IS X Finance/Real estate		0.357***		0.340***		-0.119***		-0.309***
		[0.027]		[0.010]		[0.010]		[0.008]
IS X Public sector				0.753***		0.241***		-0.209***
				[0.025]		[0.022]		[0.006]
IS X Other		-0.110***		0.195***		0.209***		-0.085***
		[0.023]		[0.012]		[0.012]		[0.007]
Geographical location:								
Urban	0.051***	0.049***	0.052***	0.062***	0.052***	0.063***	0.055***	0.062***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Central Serbia	-0.288***	-0.285***	-0.287***	-0.276***	-0.288***	-0.290***	-0.282***	-0.270***

		[0.001]	[0.001]		[0.001]	[0.001]		[0.001]	[0.001]		[0.001]	[0.001]
Vojvodina		-0.189***	-0.178***		-0.183***	-0.169***		-0.183***	-0.177***		-0.177***	-0.163***
		[0.001]	[0.001]		[0.001]	[0.001]		[0.001]	[0.001]		[0.001]	[0.001]
IS X Urban			0.164***			-0.226***			-0.178***			-0.031***
			[0.008]			[0.005]			[0.005]			[0.002]
IS X Central Serbia			0.02			-0.240***			-0.005			-0.025***
			[0.015]			[0.009]			[0.010]			[0.003]
IS X Vojvodina			-0.456***			-0.379***			-0.163***			-0.028***
			[0.017]			[0.009]			[0.009]			[0.003]
Constant	10.079***	9.665***	9.667***	10.096***	9.684***	9.706***	10.093***	9.671***	9.720***	10.114***	9.705***	9.687***
	[0.001]	[0.003]	[0.003]	[0.001]	[0.003]	[0.003]	[0.001]	[0.003]	[0.003]	[0.001]	[0.003]	[0.003]
R^2	0.04	0.39	0.4	0.06	0.39	0.4	0.05	0.39	0.4	0.03	0.37	0.39
N	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577

Notes: Estimations employ robust Huber-White (Huber, 1967; White, 1980) standard errors and incorporate sampling weights. Reference groups are: "15-24" (age cohorts); "Primary or less" (education completed); "Agriculture" (industry); "Elementary occupations" (occupation); "Firm size 1-5" (firm size); and "Belgrade" (region). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 Round).

APPENDIX D: Detailed Three-fold Earnings Decompositions

Table D1. Detailed Three-fold Earnings Decompositions: Unregistered Firms (October 2008 and October 2009)

	October 2008						*October 2009*					
	Using formal sector endowments and returns:			*Using informal sector endowments and returns:*			*Using formal sector endowments and returns:*			*Using informal sector endowments and returns:*		
	Endowments	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*
Age cohort	-0.009***	0.046***	0.041***	0.032***	0.087***	-0.041***	-0.019***	0.182***	0.018***	-0.001***	0.200***	-0.018***
	[0.002]	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]	[0.002]	[0.004]	[0.002]	[0.000]	[0.004]	[0.002]
Education	0.373***	0.373***	-0.287***	0.086***	0.086***	0.287***	0.088***	-0.026***	-0.035***	0.053***	-0.061***	0.035***
	[0.004]	[0.005]	[0.004]	[0.001]	[0.003]	[0.004]	[0.003]	[0.004]	[0.003]	[0.001]	[0.003]	[0.003]
Part-time	0.374***	-0.120***	-0.220***	0.154***	-0.340***	0.220***	0.128***	-0.046***	-0.064***	0.064***	-0.110***	0.064***
	[0.004]	[0.003]	[0.004]	[0.002]	[0.005]	[0.004]	[0.003]	[0.002]	[0.003]	[0.001]	[0.005]	[0.003]
Industry	-0.074***	-0.179***	0.140***	0.066***	-0.039***	-0.140***	-0.091***	0.054***	0.118***	0.026***	0.171***	-0.118***
	[0.004]	[0.003]	[0.004]	[0.002]	[0.004]	[0.004]	[0.005]	[0.004]	[0.005]	[0.001]	[0.003]	[0.005]
Occupation	0.153***	0.104***	0.01	0.163***	0.115***	-0.01	0.102***	0.009	-0.028***	0.074***	-0.019***	0.028***
	[0.008]	[0.008]	[0.008]	[0.001]	[0.003]	[0.008]	[0.006]	[0.007]	[0.006]	[0.001]	[0.003]	[0.006]
Firm size	-0.012***	0.099***	0.056***	0.044***	0.156***	-0.056***	0.252***	0.147***	-0.184***	0.068***	-0.037***	0.184***
	[0.003]	[0.006]	[0.003]	[0.001]	[0.006]	[0.003]	[0.008]	[0.006]	[0.008]	[0.001]	[0.004]	[0.008]
Urban	-0.041***	-0.026***	0.044***	0.003***	0.017***	-0.044***	0.046***	0.015***	-0.035***	0.011***	-0.020***	0.035***
	[0.003]	[0.002]	[0.003]	[0.000]	[0.001]	[0.003]	[0.002]	[0.001]	[0.002]	[0.000]	[0.001]	[0.002]
Region	-0.001	-0.121***	0.005	0.005***	-0.115***	-0.005	0.041***	-0.011***	-0.027***	0.014***	-0.037***	0.027***
	[0.003]	[0.005]	[0.004]	[0.000]	[0.002]	[0.004]	[0.002]	[0.003]	[0.002]	[0.001]	[0.001]	[0.002]
Constant		0.185***			0.185***			0.01			0.01	
		[0.012]			[0.012]			[0.007]			[0.007]	
N	2,783	2,783	2,783	2,783	2,783	2,783	2,577	2,577	2,577	2,577	2,577	2,577

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 and October 2009 Rounds).

Table D2. Detailed Three-fold Earnings Decompositions: No Labor Contract (October 2008 and October 2009)

	October 2008						*October 2009*					
	Using formal sector endowments and returns:			*Using informal sector endowments and returns:*			*Using formal sector endowments and returns:*			*Using informal sector endowments and returns:*		
	Endowments	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*
Age cohort	0.046***	0.006***	-0.015***	0.031***	-0.009***	0.015***	0.002	-0.170***	0.020***	0.022***	-0.150***	-0.020***
	[0.001]	[0.002]	[0.001]	[0.000]	[0.002]	[0.001]	[0.001]	[0.004]	[0.001]	[0.000]	[0.004]	[0.001]
Education	0.081***	0.000	-0.010***	0.071***	-0.010***	0.010***	0.184***	0.243***	-0.114***	0.070***	0.129***	0.114***
	[0.002]	[0.003]	[0.002]	[0.001]	[0.002]	[0.002]	[0.005]	[0.008]	[0.005]	[0.001]	[0.003]	[0.005]
Part-time	0.147***	-0.162***	-0.096***	0.051***	-0.258***	0.096***	0.104***	-0.156***	-0.086***	0.019***	-0.241***	0.086***
	[0.001]	[0.003]	[0.002]	[0.001]	[0.005]	[0.002]	[0.001]	[0.003]	[0.002]	[0.001]	[0.004]	[0.002]
Industry	-0.005***	-0.041***	0.026***	0.021***	-0.016***	-0.026***	0.167***	0.111***	-0.150***	0.017***	-0.040***	0.150***
	[0.002]	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]	[0.005]	[0.003]	[0.005]	[0.001]	[0.003]	[0.005]
Occupation	0.047***	-0.135***	0.061***	0.108***	-0.074***	-0.061***	0.104***	-0.053***	-0.023***	0.081***	-0.076***	0.023***
	[0.003]	[0.003]	[0.003]	[0.001]	[0.002]	[0.003]	[0.003]	[0.003]	[0.003]	[0.001]	[0.002]	[0.003]
Firm size	0.135***	0.125***	-0.105***	0.030***	0.020***	0.105***	0.092***	0.040***	-0.040***	0.052***	-0.001	0.040***
	[0.002]	[0.002]	[0.002]	[0.000]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]
Urban	-0.017***	-0.008***	0.021***	0.004***	0.013***	-0.021***	-0.028***	-0.010***	0.039***	0.011***	0.029***	-0.039***
	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]	[0.001]
Region	0.044***	0.024***	-0.038***	0.006***	-0.014***	0.038***	0.059***	0.050***	-0.043***	0.016***	0.007***	0.043***
	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]	[0.001]	[0.001]	[0.002]	[0.001]	[0.000]	[0.001]	[0.001]
Constant		0.534***			0.534***			0.181***			0.181***	
		[0.006]			[0.006]			[0.008]			[0.008]	
N	2,783	2,783	2,783	2,783	2,783	2,783	2,577	2,577	2,577	2,577	2,577	2,577

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 and October 2009 Rounds).

Table D3. Detailed Three-fold Earnings Decompositions: No Benefits (October 2008 and October 2009)

	October 2008						*October 2009*					
	Using formal sector endowments and returns:			*Using informal sector endowments and returns:*			*Using formal sector endowments and returns:*			*Using informal sector endowments and returns:*		
	Endowments	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*
Age cohort	0.036***	0.007***	-0.007***	0.029***	-0.001	0.007***	0.007***	-0.036***	0.015***	0.023***	-0.021***	-0.015***
	[0.001]	[0.002]	[0.001]	[0.000]	[0.002]	[0.001]	[0.001]	[0.006]	[0.001]	[0.000]	[0.007]	[0.001]
Education	0.078***	0.008***	-0.017***	0.061***	-0.009***	0.017***	0.060***	0.004	0.001	0.060***	0.005*	-0.001
	[0.002]	[0.003]	[0.002]	[0.001]	[0.002]	[0.002]	[0.004]	[0.006]	[0.004]	[0.001]	[0.003]	[0.004]
Part-time	0.145***	-0.210***	-0.124***	0.021***	-0.334***	0.124***	0.066***	-0.054***	-0.026***	0.040***	-0.080***	0.026***
	[0.001]	[0.003]	[0.002]	[0.002]	[0.005]	[0.002]	[0.001]	[0.003]	[0.001]	[0.001]	[0.004]	[0.001]
Industry	-0.012***	-0.055***	0.033***	0.022***	-0.022***	-0.033***	0.076***	0.021***	-0.055***	0.021***	-0.034***	0.055***
	[0.002]	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]	[0.004]	[0.002]	[0.004]	[0.001]	[0.002]	[0.004]
Occupation	0.104***	-0.049***	-0.006***	0.098***	-0.056***	0.006***	0.012***	-0.137***	0.064***	0.076***	-0.073***	-0.064***
	[0.002]	[0.003]	[0.002]	[0.001]	[0.002]	[0.002]	[0.004]	[0.005]	[0.004]	[0.001]	[0.002]	[0.004]
Firm size	0.057***	0.046***	-0.029***	0.028***	0.017***	0.029***	0.057***	0.002	-0.011***	0.045***	-0.009***	0.011***
	[0.002]	[0.002]	[0.002]	[0.000]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.000]	[0.002]	[0.002]
Urban	-0.019***	-0.006***	0.023***	0.003***	0.017***	-0.023***	-0.019***	-0.007***	0.030***	0.011***	0.023***	-0.030***
	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.001]
Region	0.023***	0.002**	-0.022***	0.001**	-0.020***	0.022***	0.037***	0.013***	-0.026***	0.011***	-0.013***	0.026***
	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]	[0.001]	[0.001]	[0.002]	[0.001]	[0.000]	[0.001]	[0.001]
Constant		0.638***			0.638***			0.363***			0.363***	
		[0.006]			[0.006]			[0.007]			[0.007]	
N	2,783	2,783	2,783	2,783	2,783	2,783	2,577	2,577	2,577	2,577	2,577	2,577

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 and October 2009 Rounds).

Table D4. Detailed Three-fold Earnings Decompositions: Micro-Firms (October 2008 and October 2009)

	October 2008						*October 2009*					
	Using formal sector endowments and returns:			*Using informal sector endowments and returns:*			*Using formal sector endowments and returns:*			*Using informal sector endowments and returns:*		
	Endowments	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*	*Endowments*	*Returns*	*Interaction*
Age cohort	0.019***	-0.087***	-0.005***	0.014***	-0.092***	0.005***	0.006***	0.113***	0.001***	0.007***	0.114***	-0.001***
	[0.000]	[0.002]	[0.000]	[0.000]	[0.002]	[0.000]	[0.000]	[0.003]	[0.000]	[0.000]	[0.003]	[0.000]
Education	0.023***	0.022***	0.006***	0.028***	0.028***	-0.006***	0.032***	0.035***	-0.011***	0.021***	0.024***	0.011***
	[0.000]	[0.001]	[0.000]	[0.000]	[0.001]	[0.000]	[0.000]	[0.001]	[0.000]	[0.000]	[0.001]	[0.000]
Part-time	0.033***	-0.093***	-0.008***	0.024***	-0.101***	0.008***	0.007***	0.011***	0.000***	0.008***	0.012***	-0.000***
	[0.001]	[0.004]	[0.000]	[0.000]	[0.005]	[0.000]	[0.000]	[0.004]	[0.000]	[0.000]	[0.004]	[0.000]
Industry	0.030***	-0.011***	-0.007***	0.023***	-0.017***	0.007***	0.025***	-0.039***	-0.009***	0.016***	-0.048***	0.009***
	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]	[0.001]
Occupation	0.052***	-0.016***	-0.006***	0.047***	-0.021***	0.006***	0.068***	-0.032***	-0.030***	0.039***	-0.062***	0.030***
	[0.001]	[0.001]	[0.001]	[0.000]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]	[0.002]	[0.001]
Urban	0.002***	-0.003***	-0.003***	-0.001***	-0.006***	0.003***	0.001***	0.003***	0.001***	0.002***	0.004***	-0.001***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Region	0.005***	-0.005***	-0.002***	0.002***	-0.008***	0.002***	0.008***	0.003***	-0.001***	0.007***	0.002***	0.001***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Constant		0.309***			0.309***			0.023***			0.023***	
		[0.005]			[0.005]			[0.005]			[0.005]	
N	2,783	2,783	2,783	2,783	2,783	2,783	2,577	2,577	2,577	2,577	2,577	2,577

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 and October 2009 Rounds).

APPENDIX E: Detailed Two-fold Earnings Decompositions

Table E1a. Detailed Two-fold Earnings Decompositions: Unregistered Firms (October 2008)

	Weight given to formal sector relative to informal sector / regression model used in determining the reference coefficients for decompositions:											
	0		*1*		*0.5*		*Share of formal sector*		*Pooled, excl. group dummy*		*Pooled, incl. group dummy*	
	Expl.	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*
Age cohort	-0.009***	0.087***	0.032***	0.046***	0.012***	0.067***	0.031***	0.048***	0.036***	0.042***	0.034***	0.045***
	[0.002]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]
Education	0.373***	0.086***	0.086***	0.373***	0.229***	0.229***	0.095***	0.363***	0.097***	0.361***	0.094***	0.365***
	[0.004]	[0.003]	[0.001]	[0.005]	[0.002]	[0.004]	[0.001]	[0.005]	[0.001]	[0.005]	[0.001]	[0.005]
Part-time	0.374***	-0.340***	0.154***	-0.120***	0.264***	-0.230***	0.161***	-0.127***	0.223***	-0.189***	0.199***	-0.165***
	[0.004]	[0.005]	[0.002]	[0.003]	[0.003]	[0.004]	[0.002]	[0.003]	[0.002]	[0.003]	[0.002]	[0.003]
Industry	-0.074***	-0.039***	0.066***	-0.179***	-0.004*	-0.109***	0.061***	-0.174***	0.094***	-0.208***	0.070***	-0.183***
	[0.004]	[0.004]	[0.002]	[0.003]	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]	[0.003]	[0.002]	[0.003]
Occupation	0.153***	0.115***	0.163***	0.104***	0.158***	0.110***	0.163***	0.105***	0.164***	0.103***	0.153***	0.115***
	[0.008]	[0.003]	[0.001]	[0.008]	[0.004]	[0.005]	[0.001]	[0.008]	[0.001]	[0.008]	[0.001]	[0.008]
Firm size	-0.012***	0.156***	0.044***	0.099***	0.016***	0.127***	0.042***	0.101***	0.052***	0.091***	0.045***	0.098***
	[0.003]	[0.006]	[0.001]	[0.006]	[0.001]	[0.006]	[0.001]	[0.006]	[0.001]	[0.006]	[0.001]	[0.006]
Urban	-0.041***	0.017***	0.003***	-0.026***	-0.019***	-0.005***	0.001***	-0.025***	0	-0.024***	0	-0.023***
	[0.003]	[0.001]	[0.000]	[0.002]	[0.001]	[0.000]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]
Region	-0.001	-0.115***	0.005***	-0.121***	0.002	-0.118***	0.004***	-0.120***	0.008***	-0.124***	0.006***	-0.123***
	[0.003]	[0.002]	[0.000]	[0.005]	[0.002]	[0.003]	[0.000]	[0.004]	[0.000]	[0.005]	[0.000]	[0.005]
Constant		0.185***		0.185***		0.185***		0.185***		0.185***		0.185***
		[0.012]		[0.012]		[0.012]		[0.012]		[0.012]		[0.012]
N	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). The references for the various weights/regression models used in determining the reference coefficients for the decompositions are as follows: 0 (Oaxaca, 1973); 1 (Oaxaca, 1973; Blinder, 1973); 0.5 (Reimers, 1983); share of formal sector (Cotton, 1988); pooled, excl. group dummy (Neumark, 1988); and pooled, incl. group dummy (Jann, 2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 Round).

Table E1b. Detailed Two-fold Earnings Decompositions: Unregistered Firms (October 2009)

	Weight given to formal sector relative to informal sector / regression model used in determining the reference coefficients for decompositions:											
	0		*1*		*0.5*		*Share of formal sector*		*Pooled, excl. group dummy*		*Pooled, incl. group dummy*	
	Expl.	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*
Age cohort	-0.019***	0.200***	-0.001***	0.182***	-0.010***	0.191***	-0.002***	0.183***	-0.003***	0.184***	-0.003***	0.184***
	[0.002]	[0.004]	[0.000]	[0.004]	[0.001]	[0.004]	[0.000]	[0.004]	[0.000]	[0.004]	[0.000]	[0.004]
Education	0.088***	-0.061***	0.053***	-0.026***	0.070***	-0.044***	0.054***	-0.027***	0.056***	-0.030***	0.055***	-0.029***
	[0.003]	[0.003]	[0.001]	[0.004]	[0.002]	[0.003]	[0.001]	[0.004]	[0.001]	[0.004]	[0.001]	[0.004]
Part-time	0.128***	-0.110***	0.064***	-0.046***	0.096***	-0.078***	0.065***	-0.047***	0.110***	-0.092***	0.083***	-0.066***
	[0.003]	[0.005]	[0.001]	[0.002]	[0.002]	[0.004]	[0.001]	[0.002]	[0.002]	[0.003]	[0.001]	[0.003]
Industry	-0.091***	0.171***	0.026***	0.054***	-0.032***	0.113***	0.024***	0.057***	0.045***	0.035***	0.030***	0.050***
	[0.005]	[0.003]	[0.001]	[0.004]	[0.002]	[0.003]	[0.001]	[0.004]	[0.001]	[0.004]	[0.001]	[0.004]
Occupation	0.102***	-0.019***	0.074***	0.009	0.088***	-0.005	0.075***	0.008	0.086***	-0.003	0.079***	0.004
	[0.006]	[0.003]	[0.001]	[0.007]	[0.003]	[0.004]	[0.001]	[0.007]	[0.001]	[0.007]	[0.001]	[0.007]
Firm size	0.252***	-0.037***	0.068***	0.147***	0.160***	0.055***	0.073***	0.143***	0.072***	0.143***	0.064***	0.151***
	[0.008]	[0.004]	[0.001]	[0.006]	[0.004]	[0.003]	[0.001]	[0.006]	[0.001]	[0.006]	[0.001]	[0.006]
Urban	0.046***	-0.020***	0.011***	0.015***	0.028***	-0.003***	0.011***	0.014***	0.011***	0.014***	0.011***	0.014***
	[0.002]	[0.001]	[0.000]	[0.001]	[0.001]	[0.000]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]
Region	0.041***	-0.037***	0.014***	-0.011***	0.028***	-0.024***	0.015***	-0.011***	0.015***	-0.011***	0.015***	-0.011***
	[0.002]	[0.001]	[0.001]	[0.003]	[0.001]	[0.002]	[0.001]	[0.003]	[0.001]	[0.003]	[0.001]	[0.003]
Constant		0.01		0.01		0.01		0.01		0.01		0.01
		[0.007]		[0.007]		[0.007]		[0.007]		[0.007]		[0.007]
N	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). The references for the various weights/regression models used in determining the reference coefficients for the decompositions are as follows: 0 (Oaxaca, 1973); 1 (Oaxaca, 1973; Blinder, 1973); 0.5 (Reimers, 1983); share of formal sector (Cotton, 1988); pooled, excl. group dummy (Neumark, 1988); and pooled, incl. group dummy (Jann, 2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 Round).

Table E2a. Detailed Two-fold Earnings Decompositions: No Labor Contract (October 2008)

	Weight given to formal sector relative to informal sector / regression model used in determining the reference coefficients for decompositions:											
	0		*1*		*0.5*		*Share of formal sector*		*Pooled, excl. group dummy*		*Pooled, incl. group dummy*	
	Expl.	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*
Age cohort	0.046***	-0.009***	0.031***	0.006***	0.039***	-0.001	0.033***	0.005**	0.037***	0	0.032***	0.005**
	[0.001]	[0.002]	[0.000]	[0.002]	[0.001]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]
Education	0.081***	-0.010***	0.071***	0	0.076***	-0.005**	0.072***	-0.001	0.082***	-0.012***	0.077***	-0.006*
	[0.002]	[0.002]	[0.001]	[0.003]	[0.001]	[0.002]	[0.001]	[0.003]	[0.001]	[0.003]	[0.001]	[0.003]
Part-time	0.147***	-0.258***	0.051***	-0.162***	0.099***	-0.210***	0.061***	-0.172***	0.130***	-0.241***	0.116***	-0.227***
	[0.001]	[0.005]	[0.001]	[0.003]	[0.001]	[0.004]	[0.001]	[0.003]	[0.001]	[0.004]	[0.001]	[0.004]
Industry	-0.005***	-0.016***	0.021***	-0.041***	0.008***	-0.029***	0.019***	-0.039***	0.066***	-0.086***	0.043***	-0.064***
	[0.002]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]
Occupation	0.047***	-0.074***	0.108***	-0.135***	0.078***	-0.105***	0.102***	-0.129***	0.145***	-0.172***	0.132***	-0.159***
	[0.003]	[0.002]	[0.001]	[0.003]	[0.001]	[0.002]	[0.001]	[0.003]	[0.001]	[0.003]	[0.001]	[0.003]
Firm size	0.135***	0.020***	0.030***	0.125***	0.083***	0.072***	0.040***	0.114***	0.047***	0.108***	0.038***	0.117***
	[0.002]	[0.002]	[0.000]	[0.002]	[0.001]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]
Urban	-0.017***	0.013***	0.004***	-0.008***	-0.007***	0.003***	0.002***	-0.006***	0	-0.004***	0	-0.004***
	[0.001]	[0.001]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Region	0.044***	-0.014***	0.006***	0.024***	0.025***	0.005***	0.010***	0.020***	0.011***	0.019***	0.010***	0.020***
	[0.001]	[0.001]	[0.000]	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]
Constant		0.534***		0.534***		0.534***		0.534***		0.534***		0.534***
		[0.006]		[0.006]		[0.006]		[0.006]		[0.006]		[0.006]
N	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). The references for the various weights/regression models used in determining the reference coefficients for the decompositions are as follows: 0 (Oaxaca, 1973); 1 (Oaxaca, 1973; Blinder, 1973); 0.5 (Reimers, 1983); share of formal sector (Cotton, 1988); pooled, excl. group dummy (Neumark, 1988); and pooled, incl. group dummy (Jann, 2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 Round).

Table E2b. Detailed Two-fold Earnings Decompositions: No Labor Contract (October 2009)

	Weight given to formal sector relative to informal sector / regression model used in determining the reference coefficients for decompositions:											
	0		*1*		*0.5*		*Share of formal sector*		*Pooled, excl. group dummy*		*Pooled, incl. group dummy*	
	Expl.	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*
Age cohort	0.002	-0.150***	0.022***	-0.170***	0.012***	-0.160***	0.021***	-0.169***	0.021***	-0.169***	0.018***	-0.167***
	[0.001]	[0.004]	[0.000]	[0.004]	[0.001]	[0.004]	[0.000]	[0.004]	[0.000]	[0.004]	[0.000]	[0.004]
Education	0.184***	0.129***	0.070***	0.243***	0.127***	0.186***	0.077***	0.236***	0.072***	0.242***	0.068***	0.246***
	[0.005]	[0.003]	[0.001]	[0.008]	[0.003]	[0.005]	[0.001]	[0.007]	[0.001]	[0.008]	[0.001]	[0.008]
Part-time	0.104***	-0.241***	0.019***	-0.156***	0.062***	-0.199***	0.024***	-0.161***	0.067***	-0.204***	0.054***	-0.191***
	[0.001]	[0.004]	[0.001]	[0.003]	[0.001]	[0.003]	[0.001]	[0.003]	[0.001]	[0.003]	[0.001]	[0.003]
Industry	0.167***	-0.040***	0.017***	0.111***	0.092***	0.035***	0.026***	0.101***	0.037***	0.091***	0.025***	0.103***
	[0.005]	[0.003]	[0.001]	[0.003]	[0.002]	[0.002]	[0.001]	[0.003]	[0.001]	[0.003]	[0.001]	[0.003]
Occupation	0.104***	-0.076***	0.081***	-0.053***	0.092***	-0.065***	0.082***	-0.054***	0.097***	-0.069***	0.092***	-0.065***
	[0.003]	[0.002]	[0.001]	[0.003]	[0.001]	[0.002]	[0.001]	[0.003]	[0.001]	[0.003]	[0.001]	[0.003]
Firm size	0.092***	-0.001	0.052***	0.040***	0.072***	0.019***	0.054***	0.037***	0.060***	0.032***	0.053***	0.039***
	[0.002]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]
Urban	-0.028***	0.029***	0.011***	-0.010***	-0.009***	0.010***	0.008***	-0.007***	0.009***	-0.008***	0.009***	-0.008***
	[0.001]	[0.001]	[0.000]	[0.001]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Region	0.059***	0.007***	0.016***	0.050***	0.038***	0.029***	0.019***	0.048***	0.018***	0.048***	0.018***	0.049***
	[0.001]	[0.001]	[0.000]	[0.002]	[0.001]	[0.001]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]
Constant		0.181***		0.181***		0.181***		0.181***		0.181***		0.181***
		[0.008]		[0.008]		[0.008]		[0.008]		[0.008]		[0.008]
N	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). The references for the various weights/regression models used in determining the reference coefficients for the decompositions are as follows: 0 (Oaxaca, 1973); 1 (Oaxaca, 1973; Blinder, 1973); 0.5 (Reimers, 1983); share of formal sector (Cotton, 1988); pooled, excl. group dummy (Neumark, 1988); and pooled, incl. group dummy (Jann, 2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 Round).

Table E3a. Detailed Two-fold Earnings Decompositions: No Benefits (October 2008)

	Weight given to formal sector relative to informal sector / regression model used in determining the reference coefficients for decompositions:											
	0		*1*		*0.5*		*Share of formal sector*		*Pooled, excl. group dummy*		*Pooled, incl. group dummy*	
	Expl.	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*
Age cohort	0.036***	-0.001	0.029***	0.007***	0.033***	0.003	0.030***	0.006***	0.036***	0	0.030***	0.005***
	[0.001]	[0.002]	[0.000]	[0.002]	[0.001]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]
Education	0.078***	-0.009***	0.061***	0.008***	0.070***	-0.001	0.063***	0.006**	0.071***	-0.001	0.066***	0.004
	[0.002]	[0.002]	[0.001]	[0.003]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.003]	[0.001]	[0.003]
Part-time	0.145***	-0.334***	0.021***	-0.210***	0.083***	-0.272***	0.035***	-0.223***	0.131***	-0.320***	0.113***	-0.301***
	[0.001]	[0.005]	[0.002]	[0.003]	[0.001]	[0.004]	[0.001]	[0.003]	[0.001]	[0.004]	[0.001]	[0.004]
Industry	-0.012***	-0.022***	0.022***	-0.055***	0.005***	-0.039***	0.018***	-0.052***	0.062***	-0.096***	0.042***	-0.076***
	[0.002]	[0.002]	[0.001]	[0.002]	[0.001]	[0.001]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]
Occupation	0.104***	-0.056***	0.098***	-0.049***	0.101***	-0.053***	0.098***	-0.050***	0.129***	-0.081***	0.117***	-0.068***
	[0.002]	[0.002]	[0.001]	[0.003]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.003]	[0.001]	[0.003]
Firm size	0.057***	0.017***	0.028***	0.046***	0.042***	0.031***	0.031***	0.043***	0.045***	0.028***	0.035***	0.038***
	[0.002]	[0.002]	[0.000]	[0.002]	[0.001]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]
Urban	-0.019***	0.017***	0.003***	-0.006***	-0.008***	0.006***	0.001***	-0.003***	0	-0.003***	0	-0.002***
	[0.001]	[0.001]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Region	0.023***	-0.020***	0.001**	0.002**	0.012***	-0.009***	0.003***	0	0.005***	-0.002*	0.004***	-0.001
	[0.001]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]
Constant		0.638***		0.638***		0.638***		0.638***		0.638***		0.638***
		[0.006]		[0.006]		[0.006]		[0.006]		[0.006]		[0.006]
N	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). The references for the various weights/regression models used in determining the reference coefficients for the decompositions are as follows: 0 (Oaxaca, 1973); 1 (Oaxaca, 1973; Blinder, 1973); 0.5 (Reimers, 1983); share of formal sector (Cotton, 1988); pooled, excl. group dummy (Neumark, 1988); and pooled, incl. group dummy (Jann, 2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 Round).

Table E3b. Detailed Two-fold Earnings Decompositions: No Benefits (October 2009)

	Weight given to formal sector relative to informal sector / regression model used in determining the reference coefficients for decompositions:											
	0		*1*		*0.5*		*Share of formal sector*		*Pooled, excl. group dummy*		*Pooled, incl. group dummy*	
	Expl.	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*
Age cohort	0.007***	-0.021***	0.023***	-0.036***	0.015***	-0.028***	0.022***	-0.035***	0.023***	-0.036***	0.020***	-0.033***
	[0.001]	[0.007]	[0.000]	[0.006]	[0.000]	[0.006]	[0.000]	[0.006]	[0.000]	[0.006]	[0.000]	[0.006]
Education	0.060***	0.005*	0.060***	0.004	0.060***	0.004	0.060***	0.004	0.063***	0.002	0.060***	0.004
	[0.004]	[0.003]	[0.001]	[0.006]	[0.002]	[0.004]	[0.001]	[0.006]	[0.001]	[0.006]	[0.001]	[0.006]
Part-time	0.066***	-0.080***	0.040***	-0.054***	0.053***	-0.067***	0.042***	-0.056***	0.061***	-0.075***	0.052***	-0.067***
	[0.001]	[0.004]	[0.001]	[0.003]	[0.001]	[0.004]	[0.001]	[0.003]	[0.001]	[0.003]	[0.001]	[0.003]
Industry	0.076***	-0.034***	0.021***	0.021***	0.049***	-0.006***	0.025***	0.018***	0.036***	0.007***	0.029***	0.014***
	[0.004]	[0.002]	[0.001]	[0.002]	[0.002]	[0.001]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]
Occupation	0.012***	-0.073***	0.076***	-0.137***	0.044***	-0.105***	0.072***	-0.133***	0.092***	-0.153***	0.088***	-0.148***
	[0.004]	[0.002]	[0.001]	[0.005]	[0.002]	[0.003]	[0.001]	[0.005]	[0.001]	[0.005]	[0.001]	[0.005]
Firm size	0.057***	-0.009***	0.045***	0.002	0.051***	-0.004**	0.046***	0.001	0.051***	-0.003*	0.047***	0.001
	[0.002]	[0.002]	[0.000]	[0.002]	[0.001]	[0.001]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]
Urban	-0.019***	0.023***	0.011***	-0.007***	-0.004***	0.008***	0.009***	-0.005***	0.009***	-0.005***	0.009***	-0.005***
	[0.001]	[0.001]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Region	0.037***	-0.013***	0.011***	0.013***	0.024***	0	0.012***	0.012***	0.013***	0.011***	0.012***	0.012***
	[0.001]	[0.001]	[0.000]	[0.002]	[0.001]	[0.001]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]
Constant		0.363***		0.363***		0.363***		0.363***		0.363***		0.363***
		[0.007]		[0.007]		[0.007]		[0.007]		[0.007]		[0.007]
N	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). The references for the various weights/regression models used in determining the reference coefficients for the decompositions are as follows: 0 (Oaxaca, 1973); 1 (Oaxaca, 1973; Blinder, 1973); 0.5 (Reimers, 1983); share of formal sector (Cotton, 1988); pooled, excl. group dummy (Neumark, 1988); and pooled, incl. group dummy (Jann, 2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 Round).

Table E4a. Detailed Two-fold Earnings Decompositions: Micro-Firms (October 2008)

	Weight given to formal sector relative to informal sector / regression model used in determining the reference coefficients for decompositions:											
	0		*1*		*0.5*		*Share of formal sector*		*Pooled, excl. group dummy*		*Pooled, incl. group dummy*	
	Expl.	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*
Age cohort	0.019***	-0.092***	0.014***	-0.087***	0.017***	-0.090***	0.015***	-0.089***	0.017***	-0.090***	0.016***	-0.089***
	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]
Education	0.023***	0.028***	0.028***	0.022***	0.026***	0.025***	0.027***	0.024***	0.027***	0.024***	0.026***	0.025***
	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]
Part-time	0.033***	-0.101***	0.024***	-0.093***	0.029***	-0.097***	0.026***	-0.095***	0.030***	-0.098***	0.029***	-0.097***
	[0.001]	[0.005]	[0.000]	[0.004]	[0.000]	[0.005]	[0.000]	[0.005]	[0.000]	[0.005]	[0.000]	[0.005]
Industry	0.030***	-0.017***	0.023***	-0.011***	0.027***	-0.014***	0.025***	-0.012***	0.029***	-0.016***	0.025***	-0.012***
	[0.001]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]
Occupation	0.052***	-0.021***	0.047***	-0.016***	0.049***	-0.018***	0.048***	-0.017***	0.052***	-0.021***	0.051***	-0.020***
	[0.001]	[0.002]	[0.000]	[0.001]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]	[0.000]	[0.002]
Urban	0.002***	-0.006***	-0.001***	-0.003***	0.001***	-0.005***	0	-0.004***	0.000***	-0.004***	0	-0.004***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Region	0.005***	-0.008***	0.002***	-0.005***	0.003***	-0.007***	0.003***	-0.006***	0.003***	-0.006***	0.003***	-0.006***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Constant		0.309***		0.309***		0.309***		0.309***		0.309***		0.309***
		[0.005]		[0.005]		[0.005]		[0.005]		[0.005]		[0.005]
N	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783	2,783

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). The references for the various weights/regression models used in determining the reference coefficients for the decompositions are as follows: 0 (Oaxaca, 1973); 1 (Oaxaca, 1973; Blinder, 1973); 0.5 (Reimers, 1983); share of formal sector (Cotton, 1988); pooled, excl. group dummy (Neumark, 1988); and pooled, incl. group dummy (Jann, 2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 Round).

Table E4b. Detailed Two-fold Earnings Decompositions: Micro-Firms (October 2009)

	Weight given to formal sector relative to informal sector / regression model used in determining the reference coefficients for decompositions:											
	0		*1*		*0.5*		*Share of formal sector*		*Pooled, excl. group dummy*		*Pooled, incl. group dummy*	
	Expl.	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*	*Expl.*	*Unexpl.*
Age cohort	0.006***	0.114***	0.007***	0.113***	0.007***	0.114***	0.007***	0.113***	0.007***	0.113***	0.007***	0.114***
	[0.000]	[0.003]	[0.000]	[0.003]	[0.000]	[0.003]	[0.000]	[0.003]	[0.000]	[0.003]	[0.000]	[0.003]
Education	0.032***	0.024***	0.021***	0.035***	0.026***	0.030***	0.023***	0.033***	0.025***	0.031***	0.025***	0.031***
	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]
Part-time	0.007***	0.012***	0.008***	0.011***	0.007***	0.012***	0.007***	0.012***	0.007***	0.012***	0.007***	0.012***
	[0.000]	[0.004]	[0.000]	[0.004]	[0.000]	[0.004]	[0.000]	[0.004]	[0.000]	[0.004]	[0.000]	[0.004]
Industry	0.025***	-0.048***	0.016***	-0.039***	0.020***	-0.043***	0.018***	-0.041***	0.023***	-0.046***	0.019***	-0.042***
	[0.001]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]
Occupation	0.068***	-0.062***	0.039***	-0.032***	0.053***	-0.047***	0.045***	-0.039***	0.044***	-0.038***	0.042***	-0.036***
	[0.001]	[0.002]	[0.000]	[0.001]	[0.000]	[0.002]	[0.000]	[0.001]	[0.000]	[0.002]	[0.000]	[0.002]
Urban	0.001***	0.004***	0.002***	0.003***	0.001***	0.003***	0.002***	0.003***	0.002***	0.003***	0.002***	0.003***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Region	0.008***	0.002***	0.007***	0.003***	0.007***	0.002***	0.007***	0.002***	0.007***	0.002***	0.007***	0.002***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Constant		0.023***		0.023***		0.023***		0.023***		0.023***		0.023***
		[0.005]		[0.005]		[0.005]		[0.005]		[0.005]		[0.005]
N	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577	2,577

Notes: Values in brackets are robust Huber-White (Huber, 1967; White, 1980) standard errors, computed according to Jann (2008). The references for the various weights/regression models used in determining the reference coefficients for the decompositions are as follows: 0 (Oaxaca, 1973); 1 (Oaxaca, 1973; Blinder, 1973); 0.5 (Reimers, 1983); share of formal sector (Cotton, 1988); pooled, excl. group dummy (Neumark, 1988); and pooled, incl. group dummy (Jann, 2008). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Serbia Labor Force Survey (October 2008 Round).