

The Russian–Ukrainian earnings divide¹

Amelie F. Constant*, Martin Kahanec** and Klaus F. Zimmermann***

*DIWDC, George Washington University, Washington, DC; and IZA, Bonn.

E-mail: constant@iza.org

**Central European University, Hungary; and IZA, Bonn. E-mail: kahanec@iza.org

***IZA, Bonn and Bonn University, Germany. E-mail: zimmermann@iza.org

Abstract

Ethnic differences are often considered to be powerful sources of diverse economic behaviour. In this article, we investigate to what extent ethnicity affects Ukrainian labour market outcomes. Using microdata from the Ukrainian Longitudinal Monitoring Survey and the Oaxaca–Blinder decomposition of earnings, we find a persistent and increasing labour market divide between ethnic Russians and Ukrainians throughout Ukraine’s transition era. We establish that language, rather than nationality, is the key factor behind this ethnic premium favouring Russians. Our findings further document that this premium is larger amongst males than females.

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1. Introduction

The role of ethnicity in the labour market has been a central theme of labour economics since the groundbreaking work of Becker (1957). The ensuing literature investigated gaps in labour market performance between ethnic majorities and minorities, generally assigning significant parts of these gaps to discrimination against ethnic minorities by the respective majority populations.² Discrimination itself is taken as an explanatory variable that reflects social, political or economic subordination of ethnic minorities. Oaxaca (1973) and Blinder (1973) have developed the analytical tools to measure discrimination in a statistical sense. These tools have been widely applied in the literature, and are also used in this article.

Very little is known about the link between labour market discrimination and subordination of ethnic groups. In this article, we investigate the labour market performance of ethnic groups under the conditions of changing patterns of institutional ethnic subordination. Following Becker (1957), we recognize ethnic discrimination as a deviation from a clearing market solution that is driven by unfounded positive or negative feelings towards certain ethnic groups.³ An ethnic divide in the labour market is a more general phenomenon that can result from ethnic discrimination or from differences in ethnic capital. An observed ethnic divide will inevitably create winners and losers, where the winners enjoy what we call an ethnic premium. Such a premium may be caused by reverse ethnic discrimination or by specific ethnic advantages involved in ethnic capital. While we apply the econometric tools of the discrimination literature, we prefer not to use the term discrimination. Instead, we use the terms ethnic divide and ethnic premium.

Ukraine offers a unique historical experiment of close social and economic interaction between two distinct ethnic groups: the Russians and the Ukrainians.

² Examples of empirical contributions include: Card and Lemieux (1994), who study black–white wage differentials in the context of general wage structure changes in the United States; Trejo (1997), who looks at Mexican American workers and explains their relatively low wages by human capital differentials; and Constant and Massey (2005), who study the occupational and earnings attainment of German guest workers. Altonji and Blank (1998) provide an exhaustive account of the literature on the role of race in the labour market.

³ According to Becker (1957), discrimination occurs when an agent is willing to pay more to avoid an economic transaction with people of different ethnicity, race, gender or other trait that is different than his or her own. Such taste-driven behaviour drives a wedge between social and private rates of returns from economic transactions. As a result, discrimination is economically harmful for both the discriminated and the discriminators. In particular, discrimination should become less pervasive, the more competition there is in the labour market. In a world of perfect competition (and assuming identical tastes), discrimination should not exist, because discriminating firms would lose market share. Becker also mentioned that deregulation can reduce discrimination.

By the end of the 20th century, these groups underwent an abrupt change of ethnic relations.⁴ Upon the dissolution of the Union of Soviet Socialist Republics (USSR) in 1991, ethnic Russians and Ukrainians experienced a reversal of institutional subordination patterns. Since ethnic Russians were privileged in the Ukraine under USSR control, it can be assumed that the ethnic Ukrainians enjoy similar privileges in the independent state of Ukraine (Stewart, 2005). Ukraine's history enables us to study a labour market ethnic divide that has evolved over time in the context of the aforementioned reversal of institutional ethnic subordination and Ukraine's transition towards a market economy. A natural hypothesis is that a group originally privileged by political institutions (the ethnic Russians) loses their economic position to the newly dominant group (the ethnic Ukrainians), at least in the political realm.

While the Orange Revolution received substantial global attention, it was a single event aimed at changing the political organization of the country. Between November 2004 (after the fraudulent presidential election) and January 2005 (when the Orange Revolution came to a peaceful finale with a 'fair and free' second run-off election), there was a series of protests. In the epicentre of the revolution was the affiliation of ethnic Russians with the conservative pro-Russian wing and the ethnic Ukrainians with the 'Orange Opposition' clinging to West Europeans. While this political cleavage was evident on the surface, it is not properly understood whether it was genuinely driven by ethnicity or caused by other factors, such as different reform intentions between the ethnic groups. Voting preferences for the forces of the forthcoming Orange Revolution were strongly driven by preferences for political and economic reforms, but they were also significantly affected by ethnicity. Russians, as opposed to Ukrainian-speakers, were significantly less likely to vote for the Orange Revolution, and nationality had similar effects (Constant *et al.*, 2011).

Our primary objective in this article is to investigate the extent to which ethnic differences have shaped the performance of Russians and Ukrainians in the Ukrainian labour market during the transition period. First, using the Ukrainian Longitudinal Monitoring Survey (ULMS), we apply the Oaxaca–Blinder decomposition to identify which dimensions of ethnicity, language or nationality drive the ethnic divide in the Ukrainian labour market. Second, we scrutinize whether such differences determine interethnic performance gaps and study how the reversal of the patterns of institutional subordination of ethnic groups shaped such deviations in the Ukrainian labour market.

⁴ While researchers had long been overlooking Ukraine and focusing their interest on the labour markets in Russia or other transition countries, more recently, a number of researchers have shown keen interest in this country. Of these, Gorodnichenko and Sabirianova Peter (2005) investigate the returns to schooling in Ukraine and Russia, Lehmann *et al.* (2006) study the incidence and cost of job loss in the Ukrainian labour market, and, in a series of papers, Ganguli and Terrell (2005a,b; 2006) provide an account of the key factors that drive wage inequality in Ukraine's transition economy. Our original contribution Constant, Kahanec and Zimmermann (2006) was the first to measure ethnic wage gaps in a transition economy, studying the case of Ukraine.

The remainder of the article is organized as follows. In Section 2, we review Ukraine's history following the break-up of the USSR and discuss the relationship between ethnicity and the economy in Ukraine. In Section 3, we describe the dataset and present the characteristics of Russians and Ukrainians. In Section 4, we investigate the composition of the labour force and study the out-flows of Russians. In Sections 5 and 6, we develop our estimation strategy to detect economic differences and the dimensions of ethnicity that drive them and we depict time paths of the ethnic divide. Finally, in Section 7, we summarize our findings and discuss the mechanisms by which ethnicity affects wages.

2. Ethnicity and the economy in Ukraine

The ethnic identity of the inhabitants of present-day Ukraine is a result of turbulent past developments. The two largest ethnic peoples, the Russians and the Ukrainians, originate from the same ancient state of Kievan Rus.⁵ After the fall of Kievan Rus, Russians and Ukrainians emerged as distinct ethnic groups during centuries of foreign rulers, including the Russian Empire, Poland, the Cossack state and Austro-Hungary, that governed large parts of the present day Ukraine. Ukrainian identity developed in spite of Russification by Imperial Russia. After the Russian Revolution in 1917, and a brief period of independence⁶ which lasted until 1922, Ukraine was incorporated into the USSR as the Ukrainian SSR. As a Soviet state, the Ukraine was stamped by Russian dominance in social, economic and political life. Yet, the Ukrainian identity and language have persisted and survived.⁷ In the Soviet Ukraine, the Ukrainian language was of low prestige, but Ukrainian nationality was not.

Since August 1991, marking the changing patterns of institutional ethnic subordination, the Ukrainian language has been reinstated as the official language and ethnic Ukrainians are the largest ethnic group in the new state. While the constitution of 1996 states that Ukrainian is the only state language, it guarantees the free use of Russian and protects Russian and other minorities languages in Ukraine. To wit, in the 2001 Ukrainian Census, 67.5 percent of the country's population named Ukrainian as their native language, and 29.6 percent named Russian as their native language. It is interesting that most Ukrainians living in the Eastern part speak Russian as the language of preference and convenience at home, but most of

⁵ Kievan Rus, also known as Kievan Ruthenia, was an important state with Kiev as its capital that existed from about 880 until the middle of the 12th century.

⁶ During this period, Ukraine split into two states: Ukrainian People's Republic and West Ukrainian People's Republic.

⁷ Fournier (2002) raises the issue of 'Slavic brotherhood' that was at the core of the Soviet internationalism and rendered Russians the leading nation and Ukrainians the 'little Russians'. That is, while the cultural boundaries between Ukrainians and Russians are blurry and while the languages are similar, there was a tacit hierarchical boundary.

them claim Ukrainian as their 'native' language even if they were raised mostly speaking Russian. The Russophone Ukrainians contend that the Ukrainian language defines their nationality and distinctiveness, but they would rather speak Russian in their daily lives. With independence, ethnic Ukrainians formally gained a dominant position in the Russian–Ukrainian ethnic relations in Ukraine. Note that during the transition period and since, there has been no ethnic conflict, intolerance, or discrimination against Russians in the new independent Ukraine. Unlike in other former Soviet states, such as Estonia and Georgia, there was not an exodus of Russians from Ukraine. Based on yearly monitoring poll results, Panina (2005) finds that there is a stable share of the population of Russian-speakers over time.

It is primarily language and nationality that distinguish ethnic Russians and Ukrainians; both are established categories in Ukraine to distinguish ethnicity (Arel and Khmelko, 2005). Russian and Ukrainian languages are similar but distinct. While language is a directly observable dimension of ethnicity, nationality is not directly observable in Ukraine. It rather relies on the commitment of the individual. Yet employers can indirectly observe employees' nationality from their behaviour, preferences, names and religious denomination. We take these two measures of ethnicity as exogenous with respect to individual socio-economic characteristics.

In this article, we focus on language as a distinguishing part of ethnicity that affects wages. We acknowledge, however, that the issue is complex. The papers by Arel (2002) and Fournier (2002) are enlightening regarding identity and language in Ukraine. While language is the ethnic marker in other countries, in Ukraine, language is uniting people rather than dividing them. Language in Ukraine is necessary but not sufficient to indicate the ethnic identity of Ukrainians. It is not simply a means of communication, but also a convenient tool for transactions. It is notable that many Ukrainians prefer to speak Russian daily, both at home and with friends, but recognize that Ukrainian is their 'native language'. It is perceived as the language related to nationality, and it is not necessarily the language that they first learned. Many Ukrainians feel that they are Ukrainian nationals, prefer speaking the Russian language, and feel a certain commonality and affinity with the Russian people. Thus, these categories are more fluid. This goes back to centuries of shared history and the affinity of the languages. We, therefore, prefer to examine the possible causes of an ethnic divide, through language and nationality, empirically rather than imposing them *a priori*.

Ukraine's economic system from 1922 until 1991, as a state of the Soviet Union, was a command economy. This type of economy is summarized by Kornai (1980). Its main features were state-owned productive resources, centralized allocation of resources and centralized administration of price setting. Wages were administratively determined by central authorities who provided employers with wage tables based on employees' experience, working conditions, and type of occupation. While the principle of equal pay for equal work regardless of gender or ethnicity was embedded in Soviet law, occupational segregation and discriminatory

promotion practices resulted in significant gender and ethnic earnings differentials.⁸

After the collapse of the Soviet Union in 1991, Ukraine embarked on a transition path towards a market economy. Among other reforms, wage setting was decentralized and bargaining between trade unions and employers was promoted. Despite some transient moves towards centralization, the Ukrainian transition is characterized by increasing power of market forces in wage bargaining. Although the Ukrainian constitution guarantees equal employment and labour rights regardless of gender and ethnicity, no explicit antidiscrimination policies are in effect in Ukraine (Ganguli and Terrell, 2006). The country still suffers from a market-unfriendly institutional base. Because of the inherited Soviet structure, Ukraine only slowly developed the institutions needed to reap the advantages of a market economy (Tiffin, 2006).

3. Data

The ULMS, carried out in 2003 and 2004, is the primary source of information for this study.⁹ The 2003 wave of the ULMS is a nationally representative survey of 8,621 individuals from 4,056 households. Together with a number of standard demographic variables at the individual and household level, ULMS contains detailed information about the labour market experience of individuals in 2003 and 2004. It also includes a retrospective section from which individual labour market experience, as well as a number of demographic variables, can be completely reconstructed back to 1997 and for the years 1991 and 1986. The respective time-series are then the basis of further analysis.

While sharing a common historical and cultural origin, Russian and Ukrainian ethnic groups in Ukraine are primarily distinguished by language and nationality. Therefore, we take self-reported nationality and primary domestic language in the 2003 wave of the ULMS as the defining factors of ethnicity in the present context. In particular, respondents were asked to indicate their nationality from a list, including Ukrainian, Russian, Byelorussian, Jewish or other nationality. For their first domestic language, they had to choose from a list, including Ukrainian, Russian, mixed Russian and Ukrainian, Byelorussian, Jewish, Polish, Hungarian or other. *Surzhyk*, an amalgam of the Russian and Ukrainian languages, is another language. We will use the word *Surzhyk* to denote the language of those people who reported

⁸ Despite the egalitarian principle, women were treated as a specific labour force and were restricted from working in occupations that were considered to be harmful to their maternity and childcare function, or to their biological and psychological peculiarities. This policy resulted in a concentration of women in white-collar jobs, whereas men were overrepresented in blue-collar jobs (Ogloblin, 1999).

⁹ For a more detailed description of the ULMS, see Lehmann *et al.* (2006), Gorodnichenko and Sabirianova Peter (2005) or Ganguli and Terrell (2006).

mixed Russian and Ukrainian as their primary domestic language.¹⁰ We study only Russians and Ukrainians, as they are the two largest ethnic groups in Ukraine.

The retrospective character of a part of the dataset implies potentials, but also concerns. A concern is the degree to which there is recall bias error in self-reported wages, since some people may have problems remembering their labour market experiences 10 or more years down the road. Past literature has examined the reliability of recalled information in retrospective data and of recall errors in general because of forgetfulness or distortions of past events in one's memory. With regard to unemployment, Akerlof and Yellen (1985) find that the further back the event is from the survey, the more it is under-reported or understated. With regard to Displaced Worker Surveys, Evans and Leighton (1995) find a dramatic undercount because of imperfect recall of respondents. Other literature suggests survey designs that minimize this error (Beckett *et al.*, 2001; Dex and McCulloch, 1998; Paull, 2002; Sudman and Bradburn, 1973).

To the extent that ULMS is a nationally representative sample, we believe that the benefits of using retrospective data from ULMS outweigh the potential biases. While we recognize that recall bias errors may always loom in retrospective surveys, we feel that this is relatively small and does not affect our results for the following reasons: (i) all possible precautions were taken in the design and methodology, as well as by those administering the questionnaires, to safeguard against recall bias; (ii) previous research using the same survey has produced very credible and reliable results and shows that recall bias in wages from ULMS is not large (Brown *et al.*, 2006; Ganguli and Terrell, 2006; Gorodnichenko and Sabirianova Peter, 2005). Using ULMS data, these studies have tested the wage distributions and have found them to be very close to the mean wages from the national statistical yearbooks. Furthermore, others used the Czech Republic survey with a similar retrospective questionnaire and provide plausible results (Munich *et al.*, 2005); (iii) we rely on retrospective reports on wages during momentous times in the history of this nation. Thus, even though memory erodes over time, people are more likely to remember these notable events from the past that have an indelible impact on people's memories and mental associations. Notably, 1986 was the year of the Chernobyl nuclear explosion, and Ukrainians are very likely to remember this devastating event. In 1991, Ukraine gained independence from the Soviet Union, and workers would be more likely to remember their wages during this historic event; (iv) in addition, the Soviet regime was characterized by a strong attachment of workers to a job. The Soviet pay scheme used a rigid wage grid and wages were clearly defined. Lastly, there was zero inflation. All these facts combined result in a minimum error in self-reported wages (Munich *et al.*, 2005); and (v) finally, the

¹⁰ Out of the Ukrainians who speak Ukrainian as their first language about 12 percent speak Russian as their second domestic language, 86 percent speak Russian, and *all* understand Russian. Out of Russians who speak Russian as their first language about 11 percent speak Ukrainian as their second domestic language, 46 percent speak Ukrainian and 69 percent understand Ukrainian.

alleged bias pertains to wages, which are our dependent variable. Thus, we avoid other common serious errors-in-variables bias with respect to the independent variables. That is, the error can be assumed to be additive white noise.

Note that, even in case of some recall bias existing in our survey, there is no reason to assume that this bias would systematically affect Ukrainians and Russians differently.¹¹ There is no reason why Ukrainians and Russians should have different memories of their wages and events.

Still, the degree of representativeness of the dataset for past years may be affected by survival bias that would imply that we are relatively less likely to observe older people in past years. To mitigate such a bias, we restrict the sample to people who were younger than the statutory retirement age (60 for men and 55 for women) in the survey year.

From the total of 37,644 observations about individuals who are, in each respective year, older than 18 and younger than the statutory retirement age, and who are not in the military or in prison, we select individuals who fall in the first to 99th percentile of the wage distribution and are employed full time. Furthermore, we eliminate observations with missing data in key variables, including gender, age, education and experience. These restrictions leave us with 18,241 observations in the baseline sample. Table 1 summarizes the frequencies of the individuals in our sample by nationality and language. From these frequencies, it is apparent that the group of individuals who identify as Russian and speak Ukrainian or Surzhyk as their first domestic language is relatively small (1.7 percent). In fact, in 2003 this group represents only 26 males and 19 females. For this reason, we do not investigate this ethno-linguistic group further as a separate group.¹²

In Table 2, we summarize wages, age and key indicators of human capital for each ethno-linguistic group in Ukraine by gender. We measure wages using monthly contractual salary of the main job.¹³ All wages, including those in foreign currencies, are normalized to the 2003 Ukrainian Hryvnia using deflators as provided by the UN Statistics Division, the International Monetary Fund, the World Bank and EconStats.

Across genders, we observe that Russian-speakers, on average, earn considerably more than the Ukrainian- or Surzhyk-speaking individuals. The wages of the two Russian-speaking groups are similar, as are the earnings of Ukrainian- and Surzhyk-speaking groups. Consistently, the average male earns a noticeably higher

¹¹ Evans and Leighton (1995) found that some demographic groups suffer more from memory loss about their displacement than others. Notably, the not-white and less educated, who have fewer years of tenure, are in the lowest paid jobs, or are in the service industries. However, they find that white-collar workers are more likely to forget than blue-collar workers and there is no clear age-pattern to forgetfulness.

¹² Note that we do not drop members of this group from the analysis, but, whenever applicable, we merge them into the larger linguistic or national groups.

¹³ Literature on the former Soviet Union suggests studying contractual monthly wages rather than actually received wages, because of substantial wage arrears that introduce error into the latter measure. See, for instance, Ganguli and Terrell (2006).

Table 1. Percentages of individuals by nationality and language

Nationality	Language			Total
	Ukrainian	Surzhyk	Russian	
Ukrainian	43.40	11.00	27.20	81.70
Russian	0.70	1.00	16.60	18.30
Total	44.10	12.00	43.80	100.00

Note: Percentages need not sum to 100 percent due to rounding errors.

Table 2. Means of key characteristics by ethno-linguistic group and gender

Characteristics	Ukrainian nationality			Russian nationality
	Ukrainian language	Surzhyk language	Russian language	Russian language
<i>Males</i>				
Contractual wage	355.1 (200.9)	375.8 (212.0)	476.4 (238.4)	450.3 (240.5)
Age	40.1 (10.8)	39.6 (11)	37.8 (11)	40.6 (11.2)
Years of education	11.9 (1.9)	11.5 (1.8)	12 (1.9)	12.2 (2)
Experience	22.2 (10.9)	22.1 (11)	19.7 (11)	22.4 (11.3)
Observations	3,665	1,063	2,334	1,423
<i>Females</i>				
Contractual wage	260.7 (136.5)	269.9 (134)	295.4 (154.1)	303 (154.7)
Age	39.6 (9.2)	40.2 (8.8)	37.6 (9.7)	40.9 (9.2)
Years of education	12.2 (2)	12.1 (1.9)	12.4 (1.9)	12.7 (1.9)
Experience	21.4 (9.6)	22.1 (9.3)	19.2 (10)	22.2 (9.2)
Observations	4,250	945	2,629	1,602

Note: Standard deviations in parentheses.

wage than the average female. As concerns the indicators of human capital, Russian-speaking Russians appear to be on average somewhat older, more experienced and more educated than other ethno-linguistic groups.¹⁴ Russian-speaking ethnic Ukrainians, however, are on average somewhat younger and less experienced than any other group. Their education, however, is second only to Russian-speaking Russians.

¹⁴ While we use this measure of potential work experience that is standard in the literature, we acknowledge that explicitly accounting for spells of participation in correspondence courses that involve both study and work experience would be beneficial. The ULMS dataset does not contain this information, however.

For a closer look at interethnic earnings differentials, we break up the median earnings differentials by nationality, language and gender for each year. In Figures 1a–c, we plot the profiles of Ukrainian men and women. We observe that the wage differentials between the three linguistic groups of ethnic Ukrainians are

Figure 1. Median wage ratios between linguistic groups of Ukrainian nationality over time by gender

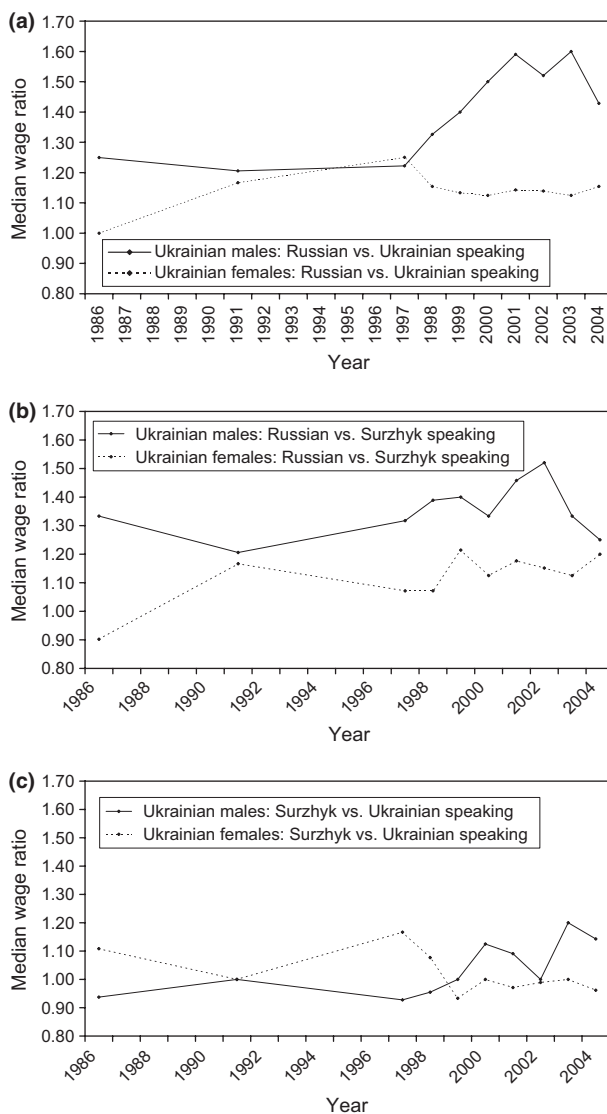
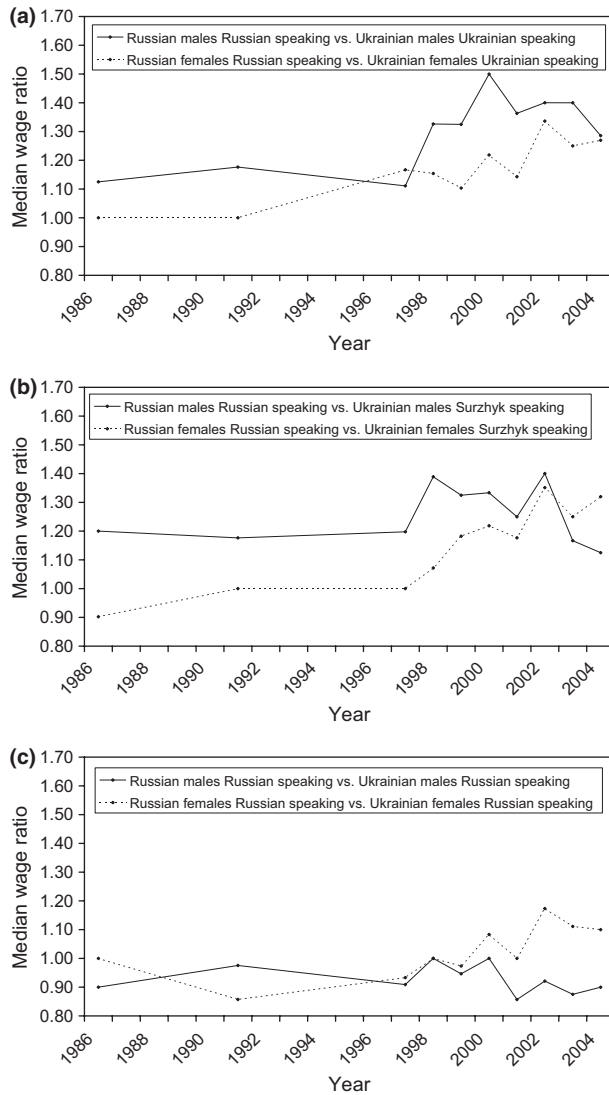


Figure 2. Median wage ratios between Russian-speakers of Russian nationality and three linguistic groups of Ukrainian nationality over time by gender



larger for males than for females. While Russian-speaking females enjoy up to 25 percent of a wage premium over Ukrainian- and Surzhyk-speaking women, the respective wage advantage of Russian-speaking males ranges between 21 percent and 60 percent. Conversely, the wage gap between Surzhyk- and Ukrainian-speak-

ing Ukrainians is fluctuating around zero. While in most cases these wage gaps do not follow distinct trends, the wage advantage of Russian-speaking males vis-à-vis their Ukrainian-speaking counterparts was steadily increasing during the late 1990s and early 2000s.

In Figures 2a–c we compare the Russian-speaking Russians to the three linguistic groups of people of Ukrainian nationality by gender for each year. As above, the wage gap is typically larger for males than for females. Russian-speaking Russian females earn up to 35 percent more than Ukrainian- and Surzhyk-speaking females of Ukrainian nationality. The respective wage gap for males ranges between 11 and 50 percent. Remarkably, the wage gaps are typically non-decreasing. Finally, Figure 2c shows that nationality does not matter if people of different nationalities speak the same (Russian) language. The major point that stands out from Figures 1 and 2 is that there are significant and persistent earnings differentials between ethno-linguistic groups in Ukraine that are predominantly driven by language. It is interesting that their patterns also differ between genders.

The regional distribution of ethnic groups in Ukraine, and its interaction with the concentration of economic activity in some regions of Ukraine, could be important confounding factors of ethnic gaps. The methodology we introduce below also hinges upon a sufficient geographic overlap of the ethnic groups under study. In Table 3, we display cross-tabulations of the distribution of ethnic groups across major geographic regions. We observe a degree of concentration of ethnic groups in some regions and a substantial geographic overlap of ethnic groups.¹⁵

Table 3. Geographical distribution by nationality and language, 2003 (percent)

Macroregion	Ukrainian nationality			Russian nationality
	Ukrainian language	Surzhyk language	Russian language	Russian language
Centre and North	62.66	20.33	12.20	4.81
East	9.82	10.93	49.89	29.36
Kyiv City	44.44	3.38	40.10	12.08
South	33.60	10.47	30.30	25.62
West	92.54	1.34	2.87	3.25

Note: Own calculations from Ukrainian Longitudinal Monitoring Survey, based on 2,631 observations (Centre and North: 541, East: 906, Kyiv City: 207, South: 363, West: 523).

¹⁵ The smallest cell for Russian-speakers (of any nationality) contains 32 individuals; for Ukrainian-speakers, it contains 89. Comparing the distributions in 2003 and 1997 (not reported), we see that these patterns of the regional distribution of ethno-linguistic groups remained fairly stable over the studied period.

4. Labour supply and potential out-mobility of Russians

Many of the most dramatic changes in Eastern European labour markets deal with substantial labour force participation. Shifts in the composition of the potential labour force through the out-mobility of Russians from Ukraine might change the situation and affect the observed earnings gaps under study. We, therefore, investigate the issue in more detail throughout this section.

Job reallocation is pertinent to all countries in transition as they try to move towards free market economies and trade liberalization. While there have been some dramatic changes in the labour markets of other Eastern European countries in the post-Soviet era (even in the Russian Federation itself), this is not the case in Ukraine. We have not found such changes in the level and structure of the labour supply in Ukraine, where events unfolded less rapidly than in Russia, for example. However, some sectors, such as manufacturing, have been hit harder than other sectors in job reallocation.

In general, there has been some decline in the employment rates (and some increase in the unemployment rates) in the period between 1995 and 2000, as documented in a study by the International Labour Organization (ILO). Moreover, the ILO's statistics show that in the period between 1997 and 2004, the unemployment rate in Ukraine ranged between 8.6 and 11.6 percent, and for the registered unemployment rate, the figures were between 2.7 and 5.5 percent – relatively moderate unemployment rates for a transition country.¹⁶ Christev *et al.* (2008) show that there is increased labour shedding because larger non-state shares in industry relate to more job destruction and less job creation. The authors also state that depending on trade orientation, trade openness affects job flows in manufacturing disproportionately. That is, trading with the European Union increases excess reallocation and this occurs primarily through job creation. Trading with the Commonwealth of Independent States, however, decreases job destruction. Brown and Earle (2006), using 1992–2000 panel data on almost all of the surviving universe of manufacturing firms inherited from the Soviet Union, find that unlike data for Soviet Russia in the 1980s, Ukrainian job reallocation in the 1990s was clearly productivity-enhancing, both within and across industries.

We have not found significant changes in the labour supply in Ukraine. Data from the Population Economic Activity Sample Survey conducted by the State Statistics Committee of Ukraine (SSCU) show that activity rates of the population between 15 and 64 years of age have changed only marginally. That is, between 1999 and 2004, they increased from 66.2 to 66.4 percent. Therefore, participation does not seem to be an issue for our analysis. Data collected by the SSCU also show that working hours have risen by about 7 percent between 1997 and 2004 (from 130 to 139 hours a month). There is no information in the ULMS on hours worked for

¹⁶ ILO (2010).

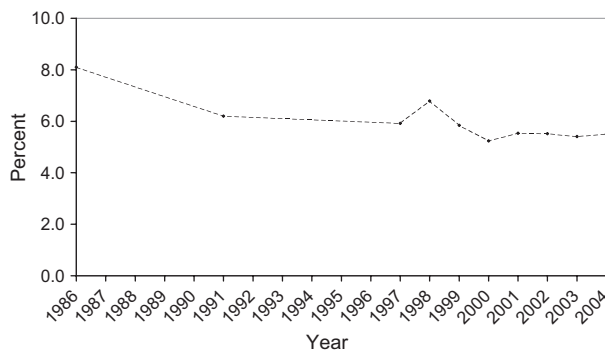
the years prior to 2003. From 2003 to 2004, the usual weekly hours worked have practically not changed in our sample; they were 42.1 in 2003 and 42.3 in 2004.

To see how the labour supply has changed over the entire period, we investigate the share of workers working less than full time. Figure 3 shows that after an initial drop from about 8 percent in 1986, the share of the less than full-time workers has been rather stable at about 6 percent. Auxiliary regressions of the full- or part-time status on gender, educational levels, experience, regional and other controls on the sample of Russian- and Ukrainian-speakers show that language and nationality do not affect the share of the less than full-time workers. Year dummy variables and year-wise regressions in the analysis also alleviate the issue. Therefore, we feel secure to argue that the changes in labour supply were not substantial and do not affect our argument about the Russian–Ukrainian earnings divide.

The composition of the labour force in Ukraine has not dramatically changed since independence either. In addition, there was no worrisome exodus of Russians from Ukraine that would skew our results. There are a number of arguments supporting this view. Ukrainians never saw Russians as oppressors. Unlike other transition countries, Russians and Ukrainians are much closer socially and accept each other. In everyday life, national identities are in fact blurred in Ukraine. Moreover, according to the ‘Act of Independence’ in 1991, Ukrainian citizens, who were present and permanently living in Ukraine at the time of independence, are all citizens of the USSR. Note that the act also made all stateless persons residing in Ukraine Ukrainian citizens.

This is in sharp contrast to the Baltic States (Estonia and Latvia) that viewed Russians as oppressors. Before the Second World War, Estonia was ethnically relatively homogenous with 94 percent of the population being ethnic Estonians. Under the Soviets and the industrialization campaign, there was a steady inflow of workers, mainly Russian-speaking, from other parts of the Soviet Union. The net inflow averaged around 10,000 people annually and resulted in a population with about 40 percent being recent immigrants. The large inflow of workers and the policy of the central government led to the increasing importance of the Russian language in

Figure 3. Share of people working less than full time



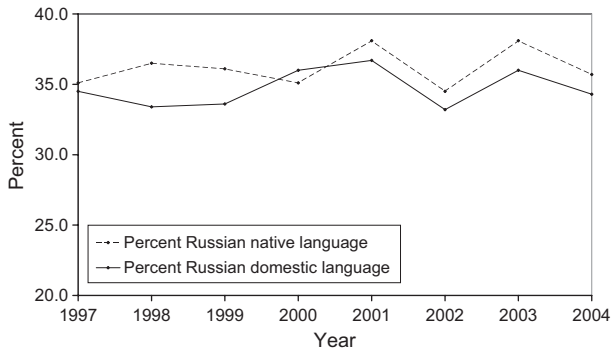
Estonia. Since the 1970s, the country has had two *de facto* official languages. Certain areas in the economic and public sphere, such as the army, railways and the merchant fleet were completely dominated by Russian-speaking workers. In most of the enterprises, which were directly controlled from Moscow, Russian was the internal working language.

After their independence, Estonia declared that citizens were only those who were citizens before the 1940 Soviet occupation, penalizing all Russophone immigrants to Estonia. That is, Estonia did not automatically grant citizenship to those who arrived after 1940 or their ancestors. Many Russians who were born and raised in Estonia and Latvia had to overcome complex legal, bureaucratic, financial and linguistic hurdles to obtain citizenship. This disenfranchised many Russians and contributed to a tremendous exodus of Russians out of Estonia and Latvia. In Estonia and Latvia, also called countries of 'ethnic democracy', some categories of Russophones (such as Soviet military personnel and their families, former KGB employees, and those classified as politically undesirable) were forced to leave the country. Data from the Central Statistical Bureau of Latvia (2005) for the period 1991–1995 estimate this emigration to be over 168,000 people. Estonia continued to practice a segregated school system after its independence. Political interest in teaching Estonian to Russian-speaking children has now increased, and Estonian schools can opt out of teaching Russian altogether. In this way, knowledge of Estonian among the Russian-speaking population has vastly improved while the younger Estonian generation has more and more difficulty understanding Russian.

That there has been no general move of Russians out of Ukraine is also documented in Panina (2005), a book of yearly monitoring poll results showing a stable share of the population of Russian-speakers over time. Based on Figure 4, we can argue that there are no significant changes or trends regarding the share of Russian-speakers in Ukraine, whether measured by native language or primary language spoken at home.¹⁷ Moreover, the Russian language is protected by law in post-Soviet Ukraine and Russians have the right to be taught in their own language. In Estonia, however, the Russian language was not protected after the demise of the USSR, and Estonian schools would not teach Russian. The history and the lot of Russian-speakers in Ukraine, who are indigenous to Ukraine, is thus very different from that in other former Soviet Union countries, such as Estonia that, indeed, experienced significant flows of people in and out of linguistic groups.

Furthermore, in Ukraine, there were no hate crimes against Russians or Russophones. Russians, as a group, were never deprived the way Serbs were deprived of their rights in Kosovo, for example. The independence of Ukraine was the most peaceful among all the Soviet-bloc countries; Ukraine was determined to unite all its residents and peoples under one nation. All these indications reinforce the conclusion that the earnings gaps studied here are not significantly caused by any

¹⁷ The survey questions in Panina (2005) were somewhat different from those asked in the ULMS, generally resulting in slightly lower shares of Russian-speakers.

Figure 4. Share of Russian-speakers over time in Ukraine

Source: Panina (2005).

changes in aggregate labour supply but are rather caused by the ethnic factors which we emphasize in our article.

5. Estimation framework

Earnings differentials between ethnic groups can be attributed to differences across these groups in (i) individual characteristics such as age, experience, education and talent, and (ii) labour market returns to these characteristics. While observable individual characteristics may differentiate ethnic groups and generate earnings differentials, they alone do not imply any direct role of ethnicity in the labour market, if comparable individuals of different ethnicities are treated equally. Alternatively, if observably identical individuals from different ethnic groups earn different wages, ethnicity directly affects the performance of ethnic groups in the labour market. Therefore, to evaluate the role of ethnicity in the Ukrainian labour market, we focus on the latter source of earnings differentials that we denote as ethnic divide. An ethnic divide can result from ethnic differences caused by unfounded feelings, as in the case of ethnic discrimination or from differences in unmeasured ethnic capital. An observed ethnic divide will inevitably create winners and losers, with the winners enjoying what we call an ethnic premium.

The well-known Oaxaca–Blinder decomposition technique (Blinder, 1973; Oaxaca, 1973) has the advantage of identifying the factors behind earnings differentials. In particular, it decomposes earnings differentials into two parts: the part explained by observable individual characteristics and the part that is unexplained and is because of differences in returns to individual characteristics or differences in unobservable characteristics. To this extent, we will be able to distinguish whether interethnic earnings differentials arise because of different characteristics of different ethnic group or because of an ethnic divide in the labour market.

The Oaxaca–Blinder decomposition technique is an established technique. It is useful in identifying and quantifying the separate impact of characteristics on ethnic wage gaps. That is, we can measure the extent of the wage gap that cannot be explained by wage-related characteristics, also interpreted as a correlate of discrimination. For the wage differential between two ethnically different groups, it gives us the component that is explained by differences in the average characteristics of the groups and the component that is not explained and is generally assumed to be related to discrimination. This decomposition technique is popular because it concerns what the level of wages would have been in the absence of discrimination, provided that the model captures all determinants of wages. We acknowledge that this is a decomposition applied to the mean. In addition, there are issues raised such as the choice of reference group in the model that affect the results produced by the decomposition. To avoid this last problem, our results are based on the male wage structure (as is standard in the literature). In contrast, the Oaxaca–Blinder decomposition has the appeal that it imposes less structure on the estimation; characteristics of productivity are free to have different regression coefficients across groups.

The Oaxaca–Blinder decomposition also serves our objective to understand the roles of the two above mentioned dimensions of ethnicity – language and nationality – in shaping the labour market divide in Ukraine. In particular, partitioning the labour force by language and nationality and then evaluating labour market differences between such defined ethnic groups reveals which of the two dimensions of ethnicity drives labour market discrimination. Our main purpose is to highlight the role of belonging to a national or linguistic group on labour market outcomes in Ukraine and to study any significant ethnic gaps over time. The Oaxaca–Blinder technique is an efficient tool for measuring the ethnic premium in a tractable way and works well for small samples in the year-by-year analysis. The year-by-year analysis is of a cross-sectional nature and, thus, involves no longitudinal econometric issues that could invalidate the Oaxaca–Blinder technique.

In the context of ethno-linguistic earnings differentials, we consider the decomposition extension suggested by Neumark (1988) as the most appropriate, because it relates group-wise models to the pooled model that assumes no discrimination in returns, thereby providing an invariable benchmark of decomposition. We indeed use this newer and updated version of the original Oaxaca–Blinder decomposition throughout the article. This method preserves the capacity of the original method to work with smaller samples and thus addresses the development of an earnings divide between ethnic groups over time. Specifically, we decompose the earnings differentials between the two ethnic groups under study, the Russians and the Ukrainians. They are denoted by R and U as follows:

$$y^R - y^U = \underbrace{\Delta x \beta^p}_{EX} + \underbrace{[x^R (\beta^R - \beta^p) + x^U (\beta^p - \beta^U)]}_{UN}, \quad (1)$$

where x represents a vector of individual characteristics, y denotes mean earnings, $(y^R - y^U)$ is the ethnic wage gap, and β is a vector of coefficients. Superscript p denotes vectors of coefficients β obtained from the pooled model, while superscripts R and U indicate vectors of coefficients from the respective group-wise models. EX and UN mark the explained and unexplained parts of the differential between y^R and y^U , respectively.¹⁸

As the core behavioural function, we apply the standard Mincer (1974) earnings equation, which is a parsimonious description of earnings profiles that is theoretically well motivated and fits the data remarkably well in most contexts. Our augmented Mincerian equation is:

$$\text{Log(Wage)} = \alpha + \beta_0 E + \beta_1 X + \beta_2 X^2 + \beta_4 Z + \varepsilon, \quad (2)$$

where the coefficients β represent the rate of return to schooling (E), experience (X), and other characteristics (Z), such as year, regional, occupational and industrial dummies, and ε is the error term assumed to satisfy $E(\varepsilon | E, X, Z) = 0$.

In the estimation of the earnings profiles, we disaggregate by gender, as it is well-known that male and female earnings profiles differ. The effects of education on earnings are captured by five levels of schooling: (i) less-than-high-school, which is the benchmark category, (ii) high school (high school diploma), (iii) vocational (vocational secondary or elementary incomplete secondary school), (iv) secondary professional (diploma of technical, medical, pedagogical, musical or other secondary professional school), (v) incomplete higher (at least 3 years at an institute, an academy or a university, but no degree or diploma), and (vi) complete higher (Bachelor's or Master's degree, diploma, or PhD equivalent from an institute, a university, or an academy). Experience is understood as potential experience, calculated as age minus years of education minus six. Other controls include nine occupational and 10 industrial categories as well as five macro-regions (Centre and North, East, Kiev City, South, and West).

Note in the sequel that while the analysed time-series were generated from retrospective information, ordinary least squares (OLS) still delivers consistent estimates and is sufficient to let us proceed with various forms of wage decompositions. We also provide, where possible, robust standard errors adjusting for clustering, or we use auxiliary analysis to find that accounting for clustering has no bearing on the decompositions.

¹⁸ Another extension of the Oaxaca–Blinder decomposition technique is the Juhn *et al.* (1991) decomposition. The latter is indeed a useful technique in that it adds a time component to the equation and looks at the entire wage distribution. However, this technique suffers from other problems such as that (i) results vary depending on the choice of the base years, and (ii) by decomposing the residual wage gap into standard deviation and percentiles rankings can be misleading. Because the dispersed distributions have thicker tails, this method would predict a growing wage gap as a result of more inequality in the returns to unmeasured skills (Suen, 1997).

Table 4. Baseline estimates of earnings profiles by nationality, language and gender

Variables	Males				Females			
	Ukrainian nationality		Russian nationality		Ukrainian nationality		Russian nationality	
	Ukrainian language	Surzhyk language	Russian language	Russian language	Ukrainian language	Surzhyk language	Russian language	Russian language
<i>Education levels</i>								
High school	0.098* (0.043)	-0.049 (0.064)	0.156** (0.049)	-0.098 (0.065)	0.112** (0.032)	-0.118 (0.070)	0.271** (0.045)	0.148* (0.067)
Vocational	0.099* (0.043)	0.05 (0.066)	0.206** (0.045)	0.01 (0.063)	0.159** (0.035)	-0.097 (0.074)	0.273** (0.045)	0.012 (0.068)
Secondary professional	0.231** (0.044)	0.208** (0.066)	0.236** (0.046)	0.112 (0.067)	0.180** (0.033)	-0.162* (0.072)	0.199** (0.044)	0.187** (0.065)
Incomplete higher	0.176* (0.076)	0.281** (0.102)	0.345** (0.093)	-0.035 (0.094)	0.468** (0.059)	-0.274** (0.083)	0.209** (0.066)	0.045 (0.113)
Complete higher	0.374** (0.044)	0.143* (0.072)	0.286** (0.049)	0.231** (0.064)	0.439** (0.034)	0.115 (0.079)	0.458** (0.045)	0.354** (0.066)
<i>Experience</i>								
Experience	0.010** (0.003)	0.013* (0.005)	0.020** (0.004)	0.019** (0.005)	0.012** (0.003)	0.020** (0.006)	0.006 (0.003)	0.025** (0.005)
Experience squared/100	-0.026** (0.007)	-0.026* (0.013)	-0.051** (0.009)	-0.052** (0.011)	-0.026** (0.007)	-0.057** (0.014)	-0.005 (0.009)	-0.061** (0.012)
<i>Dummies</i>								
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	5.892** (0.056)	5.883** (0.100)	5.986** (0.074)	6.136** (0.097)	5.493** (0.050)	5.775** (0.095)	5.542** (0.070)	5.427** (0.084)
R ²	0.13	0.11	0.09	0.11	0.16	0.21	0.14	0.14
Log wage (SD)	5.73 (0.55)	5.79 (0.53)	6.04 (0.51)	5.97 (0.55)	5.45 (0.47)	5.49 (0.44)	5.57 (0.47)	5.6 (0.46)
Observations	3,665	1,063	2,334	1,423	4,250	945	2,629	1,602

Notes: Robust standard errors in parentheses. *Significant at 5 percent; **significant at 1 percent.

In Table 4, we report the baseline results of Equation (2) for each ethno-linguistic group on data pooled over all years, controlling for year but not for region, occupation or industry. We observe that the coefficients have signs consistent with previous findings in the literature. We further find that although the general coefficient patterns are similar across ethno-linguistic groups, coefficients vary across groups.

Table 5. Oaxaca–Blinder decomposition, Neumark (1988) method, by gender

	Males			Females		
	Ukrainian nationality			Ukrainian nationality		
	Ukrainian language	Surzhyk language	Russian language	Ukrainian language	Surzhyk language	Russian language
<i>Ukrainian nationality</i>						
Surzhyk language						
Difference	0.062**		0.046**			
	(0.019)		(0.016)			
Explained	-0.006		-0.003			
	(0.007)		(0.007)			
Unexplained	0.068**		0.049**			
	(0.018)		(0.015)			
Russian language						
Difference	0.317**	0.254**		0.125**	0.079**	
	(0.014)	(0.020)		(0.012)	(0.017)	
Explained	-0.002	0.006		-0.005	-0.01	
	(0.005)	(0.007)		(0.004)	(0.007)	
Unexplained	0.319**	0.248**		0.130**	0.089**	
	(0.013)	(0.018)		(0.011)	(0.016)	
<i>Russian nationality</i>						
Russian language						
Difference	0.242**	0.179**	-0.075**	0.155**	0.109**	0.029*
	(0.017)	(0.022)	(0.018)	(0.014)	(0.019)	(0.015)
Explained	0.004	0.022**	-0.002	0.027**	0.028**	0.032**
	(0.006)	(0.009)	(0.006)	(0.006)	(0.008)	(0.006)
Unexplained	0.237**	0.157**	-0.073**	0.128**	0.081**	-0.003
	(0.016)	(0.020)	(0.017)	(0.013)	(0.017)	(0.014)

Notes: Standard errors in parentheses. *Significant at 5 percent; **significant at 1 percent. A positive number implies that the row group earns more than the respective column group. Log wage differentials are in log points.

In Table 5, we present the measured differences resulting from the Oaxaca–Blinder decomposition estimation. In this exercise, we find that there are significant earnings differentials among all pairs of ethno-linguistic groups, regardless of gender. In all cases, it appears that being a Russian- or Surzhyk-speaker is an advantage. For Russian-speakers, males with Russian nationality earn less than their counterparts with Ukrainian nationality. Interestingly, the opposite holds for females. In general, the magnitudes of differentials are larger for males than for females. The key finding is that observable individual characteristics do not fully explain observed ethno-linguistic wage differentials.¹⁹

Besides education, experience and year, there are other important factors that explain earnings and earnings differentials between ethnic groups. Such factors include geographical, occupational and industrial concentrations of different ethno-linguistic groups. It is, for example, well-known that the eastern regions of Ukraine, which are the most industrialized, are predominantly populated by Russian-speakers. In addition, occupational and industrial specialization along ethnic lines may be present as a consequence of Soviet discriminatory policies.

In Table 6, we report results of a pooled OLS model similar to Equation (2). In this exercise, we control for regional, occupational and industrial characteristics, as well. We observe that the explanatory power measured by R^2 increases about three times, indicating that these control variables explain a large part of earnings differentials. However, the general patterns of the effects of education, age and experience are similar to those in the baseline analysis reported in Table 4, indicating that their effects are independent of region, industry or occupation.

While we see that geographic location is an important determinant of earnings, these vary across ethno-linguistic groups. In fact, for Russian-speaking males with Russian nationality geographic location does not matter at all, and for their female counterparts, it is not advantageous to live in Eastern or Western Ukraine. In contrast, Ukrainian-speakers fare better in Eastern and Western regions as well as in the capital. Along with the uneven regional distribution of ethno-linguistic groups in Ukraine, this finding implies that uneven distribution may explain some, but certainly not all, of the observed interethnic earnings gaps. As a result of a number of missing values for these control variables, the number of observations are somewhat smaller than in the baseline analysis.

In Table 7, we show the Oaxaca–Blinder decomposition for the model in which the regional and industry effects are accounted. Comparing this model to the baseline decomposition model reported in Table 4, we observe that the unexplained share of earnings differentials is relatively smaller and the explained share becomes significant and relatively larger. Yet, the unexplained part of earnings differentials remains strongly significant, in general favouring Russian-speakers.

Examining the unexplained parts of earnings differentials, we observe that the ethnic divide between Russian-speakers of Russian nationality and Russian-speak-

¹⁹ Auxiliary estimations show that this finding is robust with respect to the clustering of observations.

Table 6. Earnings profiles with regional, occupational and industrial controls by nationality, language and gender

Variables	Males				Females			
	Ukrainian nationality		Russian nationality		Ukrainian nationality		Russian nationality	
	Ukrainian language	Surzhyk language	Russian language	Russian language	Ukrainian language	Surzhyk language	Russian language	Russian language
<i>Education levels</i>								
High school	0.049 (0.041)	-0.148* (0.066)	0.073 (0.046)	0.026 (0.068)	0.004 (0.034)	-0.160* (0.079)	0.200** (0.052)	0.04 (0.054)
Vocational	0.027 (0.041)	-0.047 (0.068)	0.144** (0.044)	0.021 (0.068)	0.054 (0.036)	-0.173* (0.082)	0.270** (0.050)	-0.034 (0.053)
Secondary	0.124** (0.043)	0.043 (0.073)	0.170** (0.045)	0.118 (0.075)	0.066 (0.036)	-0.197* (0.078)	0.133* (0.052)	0.074 (0.052)
Professional	0.103 (0.074)	-0.057 (0.117)	0.062 (0.102)	0.065 (0.094)	0.260** (0.057)	-0.580** (0.107)	0.206** (0.066)	-0.029 (0.104)
Incomplete higher	0.304** (0.049)	-0.075 (0.079)	0.292** (0.054)	0.248** (0.072)	0.259** (0.041)	-0.062 (0.090)	0.318** (0.054)	0.180** (0.058)
<i>Experience</i>								
Experience	0.006* (0.003)	0.011* (0.005)	0.023** (0.004)	0.015** (0.005)	0.016** (0.003)	0.014* (0.005)	0.007* (0.003)	0.024** (0.005)
Experience squared/100	-0.018** (0.007)	-0.019 (0.012)	-0.056** (0.008)	-0.042** (0.012)	-0.036** (0.007)	-0.045** (0.013)	-0.01 (0.008)	-0.057** (0.011)

Table 6. (cont) Earnings profiles with regional, occupational and industrial controls by nationality, language and gender

Variables	Males				Females			
	Ukrainian nationality		Russian nationality		Ukrainian nationality		Russian nationality	
	Ukrainian language	Surzhyk language	Russian language	Russian language	Ukrainian language	Surzhyk language	Russian language	Russian language
<i>Regional controls</i>								
East	0.075** (0.026)	0.159** (0.039)	-0.044 (0.045)	0.003 (0.078)	0.102** (0.020)	-0.041 (0.027)	-0.069** (0.024)	-0.103* (0.043)
Kyiv City	0.364** (0.040)	0.134 (0.106)	0.100 (0.053)	0.046 (0.106)	0.376** (0.031)	-0.199* (0.087)	0.058 (0.033)	0.035 (0.062)
South	0.034 (0.026)	-0.004 (0.045)	-0.014 (0.050)	0.015 (0.082)	-0.003 (0.024)	0.029 (0.041)	0.090** (0.030)	0.041 (0.047)
West	0.058** (0.019)	0.153 (0.096)	-0.023 (0.142)	-0.127 (0.120)	0.084** (0.015)	0.484** (0.083)	-0.044 (0.064)	-0.161* (0.063)
<i>Dummies</i>								
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	5.914** (0.065)	5.815** (0.118)	5.679** (0.095)	6.170** (0.140)	5.615** (0.061)	6.085** (0.114)	5.804** (0.101)	5.721** (0.109)
R ²	0.35	0.36	0.26	0.26	0.32	0.44	0.34	0.34
Log wage (SD)	5.73 (0.55)	5.78 (0.54)	6.04 (0.51)	5.97 (0.55)	5.44 (0.47)	5.49 (0.44)	5.57 (0.47)	5.6 (0.46)
Observations	3,337	971	2,074	1,210	3,915	873	2,389	1,459

Notes: Robust standard errors in parentheses. Omitted region: Centre and North. *Significant at 5 percent; **significant at 1 percent.

Table 7. Oaxaca–Blinder decomposition with regional, occupational and industrial controls, Neumark (1988) method, by gender

	Males			Females		
	Ukrainian nationality			Ukrainian nationality		
	Ukrainian language	Surzhyk language	Russian language	Ukrainian language	Surzhyk language	Russian language
<i>Ukrainian nationality</i>						
Surzhyk language						
Difference	0.051*			0.043*		
	(0.020)			(0.017)		
Explained	0.028*			0.011		
	(0.014)			(0.011)		
Unexplained	0.023			0.032*		
	(0.015)			(0.013)		
Russian language						
Difference	0.302**	0.251**		0.131**	0.089**	
	(0.015)	(0.021)		(0.012)	(0.018)	
Explained	0.219**	0.153**		0.079**	0.017*	
	(0.012)	(0.015)		(0.009)	(0.012)	
Unexplained	0.083**	0.098**		0.052**	0.072**	
	(0.009)	(0.015)		(0.008)	(0.014)	
<i>Russian nationality</i>						
Russian language						
Difference	0.232**	0.181**	-0.070**	0.155**	0.113**	0.024
	(0.019)	(0.024)	(0.020)	(0.014)	(0.020)	(0.016)
Explained	0.171**	0.120**	-0.032**	0.096**	0.049**	0.027**
	(0.014)	(0.017)	(0.010)	(0.011)	(0.013)	(0.010)
Unexplained	0.061**	0.061**	-0.038*	0.059**	0.063**	-0.003
	(0.011)	(0.017)	(0.017)	(0.009)	(0.015)	(0.013)

Notes: Standard errors in parentheses. *Significant at 5 percent; **significant at 1 percent. A positive number implies that the row group earns more than the respective column group. Log wage differentials are in log points.

ers of Ukrainian nationality is barely significant in the case of males and insignificant in the case of females. However, the labour market does favour these two groups *vis-à-vis* Surzhyk and Ukrainian-speakers, and hence provides an ethnic premium to Russian-speakers. In comparison with Ukrainian- and Surzhyk-speakers, the magnitudes of these differences are similar for Russian-speakers of Russian and Ukrainian nationality. Finally, Surzhyk- and Ukrainian-speaking males of

Ukrainian nationality are treated almost identically by the labour market. In contrast, the labour market somewhat favours Surzhyk- over Ukrainian-speaking women of Ukrainian nationality.²⁰

Naturally, we want to investigate whether there is an effect of unobserved individual characteristics that are randomly distributed among individuals on the estimated patterns of labour market discrimination. For that purpose, we estimate a random effects model. The results of this exercise are displayed in Table 8. They reveal that allowing for random effects has little bearing on the estimated coefficients.

The results on the Oaxaca–Blinder decomposition exercise are presented in Table 9. Surprisingly, we cannot find any differences. We conclude that individual random effects do not affect our key predictions.

6. Measured ethnic divide

Based on the results depicted above, the Oaxaca–Blinder decomposition suggests that it is language, rather than nationality, that drives the labour market divide between Russians and Ukrainians. Given this finding, we estimate the Oaxaca–Blinder decomposition for linguistic groups.²¹ In the first step, we merge Russian-speakers of Russian and Ukrainian nationality to form the Russian linguistic group. We construct Surzhyk-speaking and Ukrainian-speaking linguistic groups similarly. For these groups, we replicate the regressions and Oaxaca–Blinder decomposition of Tables 6 and 7. We present these results in Table 10. The upshot of this exercise is that the general patterns of earnings profiles are similar to those observed previously. The additional dummy variable that identifies Russian nationality is not significantly different from zero. This is true for all linguistic groups except for the Russian-speaking males, where it is negative at a marginal significance level. These results further support our previous findings that nationality is not a source of labour market divide in Ukraine.

In Table 11, we report the corresponding results from the Oaxaca–Blinder decomposition exercise. As before, judged by the unexplained component of earnings differentials, the differential is slightly larger for males than for females. The only exception to this finding is that the earnings differentials between Surzhyk- and Ukrainian-speakers are larger for females. In fact, it turns out that, based on the insignificance of the unexplained parts of earnings differentials; we could treat

²⁰ Auxiliary estimations show that these findings are robust with respect to clustering of observations.

²¹ We have investigated partition of labour force by nationality. Results on the Oaxaca–Blinder decomposition (available upon request) show that earnings differentials between people with Russian and Ukrainian nationality are fully explained by differences in characteristics rather than by differences in coefficients (labour market discrimination). Language, as expected, turns out as a significant explanatory variable of the earnings of different groups defined by nationality.

Table 8. Earnings profiles with random individual effects by nationality, language and gender

Variables	Males				Females			
	Ukrainian nationality		Russian nationality		Ukrainian nationality		Russian nationality	
	Ukrainian language	Surzhyk language	Russian language	Russian language	Ukrainian language	Surzhyk language	Russian language	Russian language
<i>Education levels</i>								
High school	0.101 (0.057)	-0.088 (0.090)	0.066 (0.073)	0.134 (0.086)	-0.011 (0.045)	-0.239 (0.142)	0.167* (0.066)	-0.136 (0.075)
Vocational	0.082 (0.059)	0.005 (0.097)	0.053 (0.075)	0.063 (0.077)	0.036 (0.050)	-0.305 (0.163)	0.119 (0.065)	-0.148 (0.082)
Secondary	0.144* (0.061)	0.138 (0.113)	0.096 (0.078)	0.257** (0.090)	0.08 (0.051)	-0.333* (0.152)	0.088 (0.070)	-0.027 (0.079)
Professional	0.168 (0.089)	-0.11 (0.162)	-0.022 (0.127)	0.133 (0.130)	0.06 (0.066)	-0.573** (0.198)	0.199* (0.081)	0.006 (0.110)
Incomplete higher	0.363** (0.073)	0.135 (0.121)	0.231* (0.091)	0.300** (0.105)	0.178** (0.057)	-0.219 (0.162)	0.229** (0.074)	0.132 (0.089)
<i>Experience</i>								
Experience	0.013** (0.004)	0.011 (0.007)	0.032** (0.005)	0.021** (0.007)	0.017** (0.004)	0.004 (0.007)	0.012* (0.005)	0.017** (0.007)
Experience squared/100	-0.032** (0.008)	-0.026 (0.014)	-0.076** (0.011)	-0.053** (0.015)	-0.039** (0.009)	-0.024 (0.016)	-0.024* (0.011)	-0.047** (0.014)
<i>Dummies</i>								
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	5.819** (0.098)	5.695** (0.153)	5.647** (0.148)	5.904** (0.255)	5.598** (0.086)	6.132** (0.191)	5.823** (0.145)	6.049** (0.153)
Observations	3182	931	1966	1137	3715	830	2263	1383

Notes: Robust standard errors in parentheses. *Significant at 5 percent; **significant at 1 percent.

Table 9. Oaxaca–Blinder decomposition with random individual effects, Neumark (1988) method, by gender

	Males			Females		
	Ukrainian nationality			Ukrainian nationality		
	Ukrainian language	Surzhyk language	Russian language	Ukrainian language	Surzhyk language	Russian language
<i>Ukrainian nationality</i>						
Surzhyk language						
Difference	0.071 (0.038)			0.049 (0.031)		
Explained	0.031 (0.019)			0.014 (0.016)		
Unexplained	0.04 (0.031)			0.035 (0.026)		
Russian language						
Difference	0.314** (0.027)	0.243** (0.040)		0.144** (0.022)	0.095** (0.033)	
Explained	0.205** (0.021)	0.129** (0.024)		0.066** (0.015)	0.009 (0.016)	
Unexplained	0.109** (0.017)	0.113** (0.029)		0.079** (0.016)	0.086** (0.028)	
<i>Russian nationality</i>						
Russian language						
Difference	0.246** (0.034)	0.174** (0.046)	-0.068 (0.037)	0.158** (0.025)	0.109** (0.035)	0.013 (0.027)
Explained	0.169** (0.024)	0.105** (0.028)	-0.023 (0.012)	0.087** (0.017)	0.038* (0.018)	0.026* (0.011)
Unexplained	0.076** (0.024)	0.070* (0.035)	-0.045 (0.034)	0.070** (0.018)	0.071* (0.029)	-0.012 (0.025)

Notes: Standard errors in parentheses. *Significant at 5 percent; **significant at 1 percent. A positive number implies that the row group earns more than the respective column group. Log wage differentials are in log points.

Ukrainian- and Surzhyk-speaking males as a single linguistic group.²² However, this is not the case for females. Interestingly, female Surzhyk-speakers are differentiated from both their Russian- and Ukrainian-speaking counterparts in the labour market.

²² We performed analysis based on such a partition of the labour force. The results did not differ from those based on the partition adopted in this section.

Table 10. Earnings profiles with random individual effects by language and gender

Variables	Males			Females		
	Ukrainian language	Surzhyk language	Russian language	Ukrainian language	Surzhyk language	Russian language
Russian nationality	0.003 (0.097)	-0.077 (0.051)	-0.041* (0.018)	-0.006 (0.043)	0.034 (0.052)	-0.004 (0.014)
<i>Education</i>						
High school	0.051 (0.041)	-0.157* (0.064)	0.057 (0.038)	0.011 (0.033)	-0.088 (0.070)	0.117** (0.038)
Vocational	0.026 (0.041)	-0.029 (0.065)	0.104** (0.037)	0.061 (0.035)	-0.072 (0.071)	0.142** (0.037)
Secondary professional	0.123** (0.043)	0.028 (0.067)	0.156** (0.039)	0.074* (0.035)	-0.117 (0.069)	0.103** (0.038)
Incomplete higher	0.1 (0.075)	-0.067 (0.115)	0.078 (0.069)	0.267** (0.057)	-0.510** (0.101)	0.119* (0.053)
Complete higher	0.292** (0.049)	-0.08 (0.076)	0.289** (0.042)	0.269** (0.040)	0.017 (0.082)	0.239** (0.040)
<i>Experience</i>						
Experience	0.006 (0.003)	0.010* (0.005)	0.021** (0.003)	0.017** (0.003)	0.012* (0.005)	0.014** (0.003)
Experience squared/100	-0.017* (0.007)	-0.022 (0.012)	-0.053** (0.007)	-0.036** (0.007)	-0.040** (0.013)	-0.029** (0.007)
<i>Dummies</i>						
Year	Yes	Yes	Yes	Yes	Yes	Yes
Regional	Yes	Yes	Yes	Yes	Yes	Yes
Occupation	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Constant	5.923** (0.065)	5.897** (0.109)	5.864** (0.079)	5.606** (0.061)	6.049** (0.107)	5.776** (0.073)
R ²	0.35	0.34	0.23	0.32	0.42	0.32
Log wage (SD)	5.73 (0.55)	5.78 (0.54)	6.01 (0.53)	5.44 (0.47)	5.49 (0.43)	5.58 (0.47)
Observations	3,372	1,084	3,284	3,988	925	3,848

Notes: Robust standard errors in parentheses. *Significant at 5 percent; **significant at 1 percent.

Having shown that ethnicity engenders earnings differentials in the Ukrainian labour market, and that these are mainly driven by linguistic segmentation in the labour force, we now proceed to investigate time paths of these differentials. That

Table 11. Oaxaca–Blinder decomposition for linguistic groups with random individual effects, Neumark (1988) method, by gender

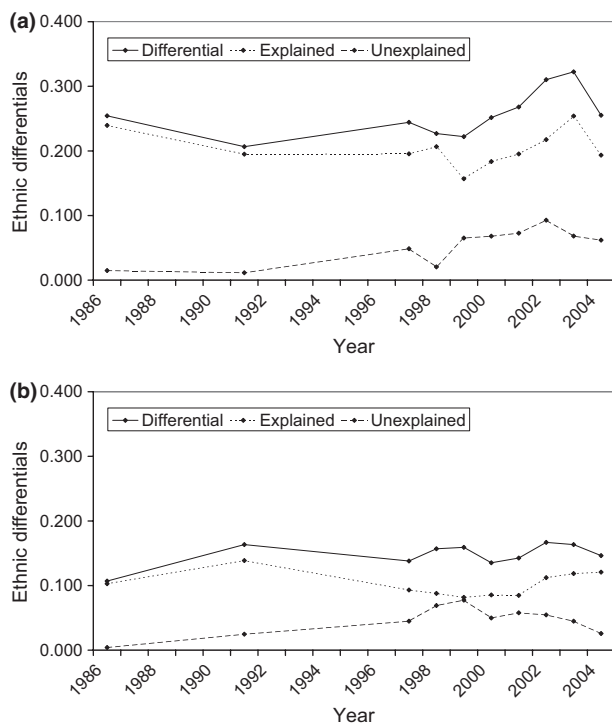
	Males		Females	
	Ukrainian language	Surzhyk language	Ukrainian language	Surzhyk language
<i>Surzhyk language</i>				
Difference	0.047* (0.019)	0.046** (0.016)		
Explained	0.026 (0.014)	0.011 (0.011)		
Unexplained	0.022 (0.014)	0.035** (0.013)		
<i>Russian language</i>				
Difference	0.277** (0.013)	0.230** (0.019)	0.140** (0.011)	0.095** (0.016)
Explained	0.209** (0.011)	0.122** (0.014)	0.092** (0.009)	0.033** (0.011)
Unexplained	0.068** (0.007)	0.107** (0.014)	0.048** (0.006)	0.062** (0.013)

Notes: Standard errors in parentheses. *Significant at 5 percent; **significant at 1 percent. A positive number implies that the row group earns more than the respective column group. Log wage differentials are in log points.

is, we investigate whether interethnic earnings differentials (or the ethnic divide) diminished or enlarged during the Ukraine's transition period. In particular, we examine whether there are any effects of Ukraine's independence on the ethnic premium in the labour market. To evaluate the time paths of ethno-linguistic earnings differentials, we estimate the Oaxaca–Blinder decomposition exercise separately for each year. The small size of the Surzhyk linguistic group does not permit investigation of time paths of earnings differentials. However, we are able to investigate the time paths of the earnings divide between Russian- and Ukrainian-speakers.

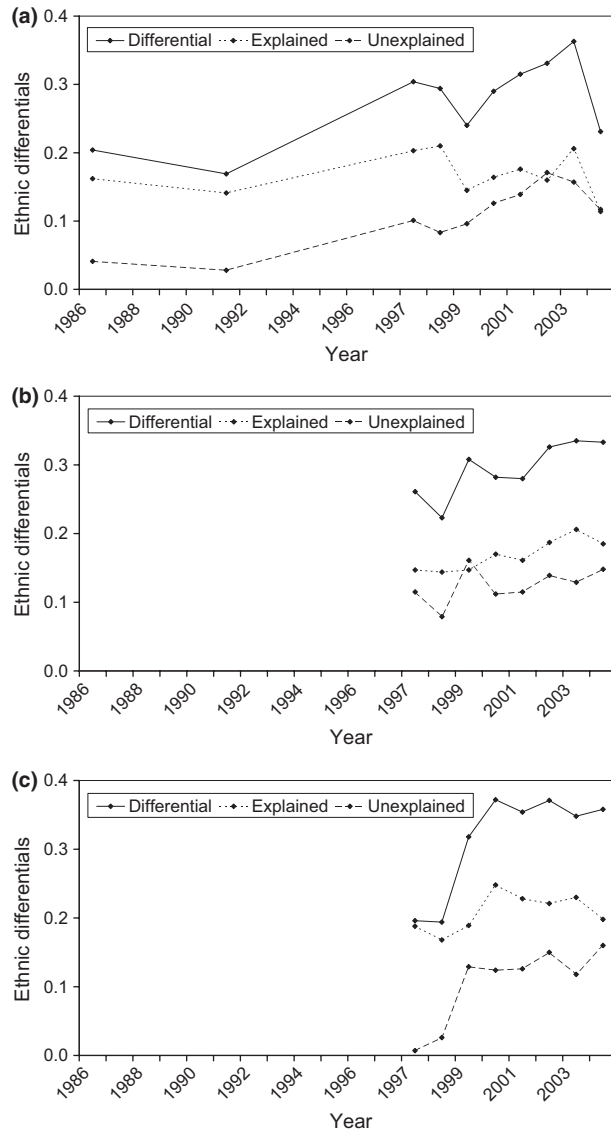
In Figure 5a and b, we illustrate these results, disaggregated by gender. We observe that Russian-speakers enjoy a relatively stable wage advantage over Ukrainian-speakers. A large part of this wage advantage is explained by observable factors. Namely, for both the male and female samples, age, education, experience, as well as occupational, industrial and regional distribution provide an advantage to the Russian-speakers. A significant part of this wage advantage, however, remains unexplained, signifying an ethnic divide and a Russian ethnic premium. This ethnic premium exhibits a non-monotonic time path. For both sexes, after the initial rise from insignificant values, the Russian ethnic premium peaks in 1999 for females and in 2002 for males; it somewhat declines thereafter. The Russian ethnic premium is for the most part larger in the case of males. The explained part of the earnings differential, however, is substantially higher in the case of males, significantly contributing to the much larger ethnic earnings differential among males than among females.

**Figure 5. Time paths of the ethnic earnings differentials and the ethnic premia.
Russian and Ukrainian linguistic groups**



Interestingly, the ethnic divide in the labour market was insignificant at the inception of the transition era. This finding implies that the Soviet domination in Ukraine prior to 1991 did not engender an ethnic premium in favour of Russian-speakers in the Ukrainian labour market, albeit Russian-speakers enjoyed numerous privileges, including a higher ranked occupational, industrial and regional distribution that generated earnings gaps in their favour. Apparently, the liberalization of the Ukrainian labour market created an environment in which these advantageous characteristics of Russian-speakers brought about an ethnic premium in their favour. An alternative explanation about the wage gap between Russophones and Ukrainophones could be that the 'Ukrainian language and culture are often perceived as inferior variants of the Russian language and culture' (Fournier, 2002, p. 431). While Ukraine's independence and the apparent cessation of Russian dominance in the country did not suffice to countervail these market effects initially, more recent years of the transition

Figure 6. Time paths of the ethnic earnings differentials and the ethnic premia, by ownership. Russian and Ukrainian linguistic groups, males



have witnessed a diminishing advantage of Russian-speakers both in terms of their characteristics and ethnic premia.²³

To investigate whether the earnings advantage of the Russian-speakers differs between more regulated state firms, including cooperatives, municipality cooperatives, and less regulated privatized and *de novo* firms, we measured the ethnic premium for males for these two types of firms over time separately. As shown in Figure 6a–c, in each sector the Russian–Ukrainian earnings gap is mostly increasing over time, and there are no significant differences between the public and private sectors. This suggests that the returns to being a member of the Russian linguistic group are increasing with the liberalization of the Ukrainian labour market, but the underlying mechanisms do not depend on the particular ownership type.

7. Summary and conclusions

Relations between ethnic Russians and Ukrainians in the independent Ukraine are an integral part of Ukrainian politics. This is evidenced, for instance, by the ethnic fragmentation of the population in Ukraine during the Orange Revolution. However, few understand the role of ethnicity and its ramifications in the Ukrainian labour market. In this article, we shed light on this issue using decomposition estimation techniques that allow us to distinguish between earnings differentials that are because of an ethnic divide from those due to differences in human capital and other individual and group characteristics.

Our main finding is that ethnicity, manifested via language, significantly affects individual earnings in Ukraine. That is, workers of Russian ethnicity earn significantly more than their Ukrainian counterparts. While the earnings gap between workers of different nationalities can be explained by their different observable characteristics, a significant part of the earnings gap between linguistic groups remains unexplained. In particular, throughout the transition period, the Russian-speaking workers enjoyed an ethnic premium in the Ukrainian labour market, peaking in 1999 for females and 2002 for males. The ethnic wage premium is for the most part larger among males than among females.

Our results on gender are in congruence with previous findings for the United States. Bayard *et al.* (1999) examine segregation by race and ethnicity and find that:

²³ Leping and Toomet (2007) document that after the initial post-independence period of equal pay for equal work in the early 1990s in Estonia, there was a rise of a substantial wage gap among males in favour of the Estonian-speaking population and against the Russian-speaking minority (of 30 percent). They attribute the unexplained wage gap to discrimination against the Russian minority. We find, similarly to the Estonian study, that before independence language (or ethnicity) did not play a role; the language premium arose later on during the transition period. However, we find an increasing earnings premium for the *non-titular* Russian-speakers in Ukraine. Our interpretation of this evidence is that it is due to the different ethnic histories and institutions in these two countries. See also our original contribution Constant, Kahanec and Zimmermann (2006).

(i) the greater segregation between Hispanic men and white men, compared with the segregation between Hispanic women and white women, accounts for all of the higher Hispanic–White wage gap for men, and (ii) the greater segregation between black and white men than between black and white women accounts for up to one-half of the higher black-white wage gap for men. The authors conclude that it is segregation that contributes to the lower wages of blacks and Hispanics and that more severe segregation among men can explain larger wage gaps among men than among women.

Examining time paths of the earnings divide between linguistic groups suggests that the centrally planned system gave both linguistic groups equal pay for equal work, but *via* labour market characteristics also engendered disadvantage against Ukrainian-speakers. Given the economic dominance of Russian-speakers, the liberalization of the labour market during Ukraine’s transition resulted in an ethnic premium for Russian-speakers beyond the one driven by labour market characteristics. These effects apparently overwhelmed the effects of reversal of patterns of institutional ethnic subordination in the newly independent Ukraine. More recently, however, the diminishing advantage of Russian-speakers both in terms of ethnic premia and labour market characteristics signal that the reversed patterns of institutional ethnic subordination have weakened the Russian-dominated networks of economic leaders and provided Ukrainian-speakers with a fairer economic environment.

While the official language in Ukraine is Ukrainian, the Russian language is protected by law and Russians have the right to be educated in their own language. Therefore, looking ahead, we do not expect drastic changes in the linguistic distribution among future generations, besides the standard regional-linguistic differences. By the same token, we do not expect any significant changes of this kind because individuals who lived under the Soviet regime will retire. The underlying root of the measured Russian–Ukrainian earnings divide is thus likely to persist well into the future. The role of mitigating any of its potentially negative effects lies mainly with the Ukrainian policymakers.

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