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Migration magnet: the role of work experience in rural–urban wage differentials

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Abstract

This study uses the nationally representative Mexican Family Life Survey (MxFLS) to identify systematic differences in earnings returns to human capital endowments for formal and informal sector workers in rural and urban Mexico. Returns to experience are critical in explaining the large urban wage gap in a Blinder-Oaxaca decomposition and indeed drive pull migration from the rural informal sector to the urban informal sector, exacerbating urban population congestion in already over-crowded main cities. Targeted rural industrial planning is essential to offset pull migration and ensure a more balanced urban/rural development through incentives.

JEL classification: J24, J31, R23, Q15

Keywords: Returns to experience; Rural–urban wage differentials; Formal/informal sector; Internal migration; Mexico

1. Introduction

Large wage gaps exist between rural and urban workers in all developing countries in the world (Mazumdar, 1987; Young, 2013). At the same time, we observe high urban unemployment, large informal sectors and criminal activity in urban centers of developing countries. Rural-to-urban migration continues, because of striving for a more prosperous life in the cities. Whether migrants succeed is a question of many factors, such as networks (Boyd, 1989; Klabunde, 2014), personality traits (Stark & Taylor, 1991), and human capital (Boucher et al. 2005; Gould, 2007; Glaeser & Maré, 2001). All of these factors contribute to higher probabilities of employment, but what is the extent to which these factors can explain rural–urban wage inequality, i.e. whether rural-to-urban migrants possess these characteristics to a larger extent than those who do not migrate? To gain insight into this question through use of indicators for the formal/informal sector, this study analyses the urban earnings potential of low educated workers from rural Mexico.

Mexico has seen dramatic increases in its urban population. Notably, Mexico hosts the largest city in the world, and the country's urban population grew from 66% to 76% between 1980 and 2005 (WorldBank, 2010). This development is illustrated in Fig. 1, which depicts the decrease of the rural population from 29% to 22% between 1990 and 2010 and an increase in population density in four of Mexico's ten largest cities; Mexico City, Guadalajara, Puebla and Monterrey. All four cities show a similar development of an increase in population of about 25% within 20 years.

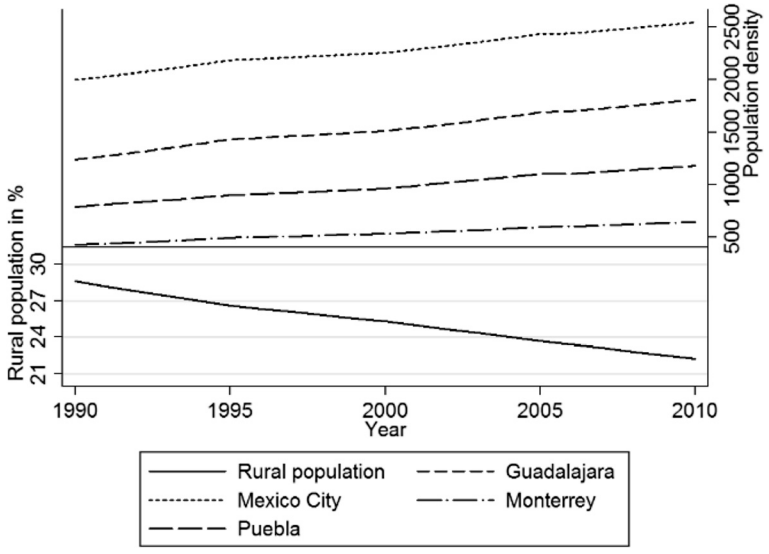

Fig. 1 Urbanisation. Source: The World Bank (http://data.worldbank.org/country/mexico), OECD Metropolitan database (http://stats.oecd.org/index.aspx). Author's construction

Urban areas are not only attractive for individuals who seek to find employment but also for firms which provide employment – and require skilled and reliable workers. Both domestic and international firms are more likely to settle in cities, or the periphery of a large city, where skilled workers are abundant. These firms tend to pay higher wages than rural, often less productive, firms (Gong & van Soest, 2002; Bosch & Maloney, 2007; Levy, 2008). For individuals from Mexico's rural areas, of which approximately 50% lives in poverty,[1] the prospect of earning relatively higher wages or even simply being employed per se is a pull-factor for migration to the cities. Moreover, as Lucas (2004) points out, the potential to increase human capital in the form of experience is an important driver for rural-to-urban migration, since the accumulation of human capital will increase future earnings prospects (Becker, 1964).

Traditional theories of rural-to-urban migration predict that rural-to-urban migrants, who do not find employment with a salary that exceeds their reservation wage, simply return home (Todaro, 1969; Harris & Todaro, 1970). In practice however, many rural-to-urban migrants remain, even when unsuccessful in the labour market. As a consequence, levels of unemployment rise further, and/or individuals work in the informal segment of the labour market. In fact, the share of individuals working informally, and the share of formally registered unemployed individuals exhibit very similar trends, as Fig. 2 shows for the period 2000 to 2006.

These macroeconomic indicators suggest that the increase in rural-to-urban migration, rising urban population density, high unemployment and a large informal sector share are highly correlated. Mexico also faces increasing levels in inequality, and crime and violence. The latter phenomena occur disproportionately often in the cities. Understanding why individuals continue to migrate, is hence of pressing importance for already densely populated urban areas.

We contribute to the explanations of the driving forces of rural-to-urban migration by investigating the differences in wages between rural and urban areas in Mexico. Focusing on the argument that rural-to-urban migration is induced by the

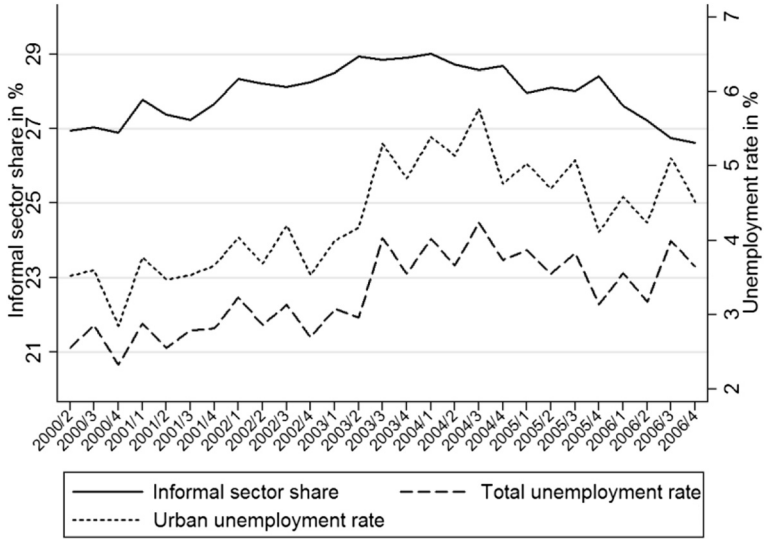

Fig. 2 Unemployment and Informal Sector Shares. Source: INEGI (http://www.inegi.org.mx/). Author's construction

incentive to earn higher wages and accumulate human capital in form of work experience, the analysis proceeds by estimating the returns to education, work experience and ability for rural and urban salaried workers separately. Thereby we take into account differences in formal and informal employment characteristics. By ascertaining the extent to which the differences in returns to human capital endowments can explain the rural–urban wage differential, we can identify the economic incentives of rural workers to migrate.

Using the detailed and *nationally representative* Mexican Family Life Survey (MxFLS, or "ENNVIH" in Spanish), this study investigates wage differentials between rural *and* urban areas in Mexico, further disaggregating by the formal and informal sector. Before the availability of the MxFLS, previous studies on wage gaps between different types of workers in Mexico were restricted to urban areas as representative data on the whole population were not available before the publication of the MxFLS.[2] This study uses the second MxFLS wave which consists of data collected in the second half of 2005 and early 2006. Using this dataset, even though it enables only a cross-sectional analysis, has two advantages: one conceptual and the other methodological. Firstly, Mexico's labour market is significantly distorted because of the skyrocketing levels of drug-related violence observable since 2007.[3] Hence, using 2005 data allows us to focus on the labour market without needing to consider indicators for violence. Second, the household survey data are of exceptional quality for the research question at hand, providing valuable information on personality traits, such as risk preferences and honesty, which enables us to control for different sources of selection that may otherwise bias the regression estimates.

We find, as expected, large and significant urban wage premia in both formal and informal sectors. Subsequently, Oaxaca-Blinder decomposition results show that in both formal and informal sectors, the rural–urban wage differential is explained by differences in levels of human capital endowment; education, experience and cognitive ability. In the informal sector, the unexplained part of the wage differential is solely driven by differences in returns to experience, whereas in the formal sector, no differences in

returns to components of human capital endowment are found. This suggests that the urban informal market is very attractive for low-skilled, highly experienced workers. Taking the findings by Maloney (1998, 1999, 2004) into consideration that in Mexico, informal labour is by its nature voluntary, rather than used to queue for formal employment (as in most other countries), the findings suggest that rural-to-urban migration will continue as long as the possibility of informal labour in urban Mexico persists. We will discuss the need for policies which address the incentives for formal employment both in urban and rural Mexico.

The paper is organised as follows. In the next section, we review the existing literature on rural–urban wage differentials and migration incentives. In Section 3, we describe the empirical strategy to identify wage differentials and account for potential selection bias. In Section 4, the data is explained and descriptive statistics are provided. Section 5 outlines the main findings, and Section 6 provides a discussion followed by the conclusions.

2. Literature review

Theories of economic development postulate that rural-to-urban migration is the driving force of a developing country's economic development. Following (Todaro, 1969) and (Harris & Todaro, 1970) individuals migrate from rural to urban areas to find better paid employment, rarely available in rural areas. Their theories postulate that migrants who do not find a job with rewards exceeding their reservation wage will remain unemployed, or simply return. In these models, the unemployment rate acts as the driving force in determining the migration equilibrium. In his extension of the models (Lucas, 2004) argues that high urban wages are attributed to high skills, which are not accessible to low-skilled immigrants. In his model, individuals migrate to the cities to accumulate work experience as a form of human capital formation. Following standard human capital theory (Becker, 1964), labour market experience will increase future earnings. Thus, the two main economic incentives to migrate are relatively high wages and the promise of accumulating human capital.

Newer models of migration also include social factors such as previous migration experience, networks and inequalities in the migration decision. One factor that has received much attention in recent years is relative deprivation, i.e. the perception of an individual or household to be "worse off" or "disadvantaged" compared to a particular reference group, for example, other families in the same village (Quinn, 2006; Stark & Taylor, 1989; Stark & Taylor, 1991). Quinn (2006) uses the data from the Mexican Migration Project (MMP) for the year 2004 and finds that relative deprivation explains part of the migration decision for internal migrants but not for those who migrate to the United States. Klabunde (2014), based on a sophisticated agent-based model using MMP data, shows that network ties are an important factor explaining both migration from Mexico to the U.S. and return migration. Lastly and equally important, Gould (2007) argues that working in a city increases workers' productivity (see also: Glaeser & Maré, 2001). Based on data of the U.S., he finds that white-collar workers receive a wage premium in rural areas if they attained work experience in an urban area, whereas blue collar workers' urban work experience is not rewarded more than rural experience. Hence, the incentive to accumulate human capital in the city is likely to play an

important part in the migration decision and, he shows, return migration is dependent on the sector of occupation.

In Mexico, increasing urbanisation has led to economic and social problems such as increasing under-employment and high crime rates. Furthermore, wage inequality has increased as more productive and human capital intensive firms settled in the cities and paid higher wages than rural, often less productive, firms (Gong & van Soest, 2002; Bosch & Maloney, 2007; Levy, 2008). That these higher wages exist, even after controlling for components of human capital endowment, costs of living and other characteristics is shown by, e.g., Glaeser & Maré (2001) for the U.S.

When investigating rural–urban wage differentials in Mexico, it is essential to take into account that the labour market is further divided into formal and informal employment. In fact, many authors do not focus on rural–urban wage differentials but on differences between formal and informal wages. Early theories by Lewis (1954) and Fields (1975) suggest that the informal sector is the disadvantaged segment of a dual labour market in which workers are not protected by social security regulations and are in weak bargaining positions with their employers. Despite the apparent disadvantages, in the last decades, some developing countries have seen an increasing informal sector. This has generated interest among economists to test the segmented market hypothesis empirically. Several studies have been published investigating not only wage differentials but also labour mobility between sectors (Maloney, 1999; Maloney, 2004; Bosch & Maloney, 2007; Bosch & Maloney, 2008). They note that informal employment is a desirable choice and see the informal sector as a result of competitive markets where individuals choose the informal sector *voluntarily* because of more flexibility and avoidance of tax payments (Marcouiller et al. 1997; Maloney, 1999). For Mexico, the segmented market hypothesis is commonly rejected. Hanson (2010) and Arias et al. (2010), for instance, state that the informal sector in Mexico's cities has increased, partly due to perverse registration incentives induced by social insurance regulations (Levy, 2008). Furthermore, informal employment can be potentially seen as an obstacle to economic development, as productivity tends to be relatively low in informal firms (Hsieh & Klenow, 2009).

Another study on wage differentials between informal and formal sectors in Mexico was conducted by Gong & van Soest (2002) using the 1992/1993 waves of the ENEU, restricting their sample to workers in Mexico's five major cities. In line with Maloney (1999) for example they find wage differentials for high-educated workers but not for low-educated workers. This implies that formal sector jobs are rather inaccessible for low-educated workers in Mexico's urban areas. However, instead of simply queuing for a formal job, individuals earn wages and accumulate human capital in the informal sector.

Finally, Meng (2001) provides one of the few studies which distinguish formal and informal labour and investigate rural–urban migration in the same context. For China, she finds that urban work experience raises the probability of becoming a formal worker and that wage differences are mainly explained by observable components of human capital endowment.

One complication of this literature is the existence of different definitions of informal employment, which confound direct comparison of results. Generally, the most commonly used definitions can be classified into two groups. First, the *legal* definition is based on the contribution to the social security system (e.g. Tannuri-Pianto & Pianto,

2002; Bosch & Maloney, 2007; Bosch & Maloney, 2008). Informal workers do not contribute to the social security system and thereby do not benefit from social security regulations such as health care and pension schemes. Another *legal* definition is based on the formality of the workers' contracts. Here, informal workers are those who do not have a written contract and, consequently, have significantly reduced or non-existent labour law protection. The other group of definitions is based on *productivity grounds*. Accordingly, the informal sector consists of workers in firms with five or fewer employees based on the argument that small firms tend neither to register their business, nor their employees (e.g. Maloney, 1999; Gong & van Soest, 2002). The problem with firm size as a measure is that larger firms tend to pay higher wages and are at risk of being caught defaulting on registering as their number of employees increases. Hence, they are more likely to register (El Badaoui et al. 2008). In this study, the most unambiguous *legal* definition is used which corresponds to registration with the social security system.

To our best knowledge, all existing studies for Mexico are based on *either* rural *or* urban household surveys *or* solely on migrants. Using the comprehensive and nationally representative Mexican Family Life Survey (MxFLS) allows us to *combine all* these dimensions and therefore investigate wage differentials between rural and urban workers whilst disaggregating by formal/informal sector.

3. Estimation methods

We seek to analyse the returns to human capital endowments such as education, work experience and ability for rural and urban workers to find out which endowments are the driving forces of rural-to-urban migration. We start by estimating a Mincer (1974) type wage regressions in which we control for sample selection from selection into salaried employment, as suggested in Heckman (1979). We exclude the self-employed from the analysis since their income is determined differently than wages of employees (Hamilton, 2000).

In the first step, a Probit model is estimated to determine the probability of individual i having salaried employment ($a_i = 1$), which we denote w (working) as opposed to not working or working without salary ($a_i = 0$), which we denote nw (not working). This can be written as

$$\Pr(\alpha_i = 1|Z_i) \equiv Z_i + u_i, \tag{1}$$

where Z_i are observed characteristics of the individual, such as human capital, personality and family indicators, γ is the vector of coefficients of these variables and u_i is the error term which is assumed to be normally distributed with zero mean and unity variance. We define two variables to represent the number of elderly and the number of infants in the household, respectively, as exclusion restrictions in the model which account for potential bias from selection into salaried employment. The number of infants in the household impacts overall in a strong manner in reducing employment probability significantly. If family planning in Mexico, a Catholic country, is driven by non-fully planned fertility, then the number of infants would be a useful exclusion restriction.

Subsequently, the non-selection hazard (also known as inverse Mill's ratio) $\lambda_{\left\{\frac{w}{nw}\right\}}$ is included in the second step wage regression in the standard manner:

$$\ln y_i = \alpha_i + \beta X_i + \delta\lambda_{\left\{\frac{w}{nw}\right\}} + \epsilon_i, \tag{2}$$

where $\ln y_i$ is the log hourly wage of individual i, β is a vector of coefficients of observable personal and household characteristics X_i, and ϵ_i is the error term which is assumed to be normally distributed with zero mean and variance σ^2. The wage y_i is observed if and only if $a_i > 0$. Since we do not find evidence for selection bias, we estimate the subsequent regressions with OLS which will serve as our baseline results.

We continue with estimating separate regressions for rural and urban employees. Here, we take into account another type of selection bias which may arise from the dual formal-informal nature of the Mexican labour market. Whilst formal employment is not available for everyone, some workers, whose employers allow or encourage them to register, have the choice, but do not comply. Hence, latent characteristics which may be related to personality or to workplace characteristics may determine whether an individual selects into the formal or informal sector.[4]

Hence, we run regressions in which we control for selection into formal (f) as opposed to informal (inf) employment in a similar vein as described above for rural (R) areas:

$$\ln y_i^R = \alpha_i^R + \beta^R X_i^R + \delta^R \lambda^R_{\left\{\frac{f}{inf}\right\}} + \epsilon_i^R; \tag{3}$$

and urban areas (U):

$$\ln y_i^U = \alpha_i^U + \beta^U X_i^U + \delta^U \lambda^U_{\left\{\frac{f}{inf}\right\}} + \epsilon_i^U. \tag{4}$$

As exclusion restrictions serve the individual's risk attitude, calculated from a set of questions described in the next section, and whether the individual is honest, i.e. disapproving of the statement "Laws are there to be broken". From these estimations we will identify the extent to which the returns to human capital endowments differ between rural and urban workers.

Subsequently, we examine whether the differences in returns to human capital endowments can solely explain the rural–urban wage gap. If this were the case, we can conclude that wage differentials are due to the difference in workers' characteristics, not firms' characteristics, and derive implications for policy to address rural-to-urban migration.

We implement a standard Blinder-Oaxaca wage decomposition (Blinder, 1973; Oaxaca, 1973), which is written as follows:

$$\overline{\ln y^R} - \overline{\ln y^U} = \hat{\beta}^R\left(\overline{X^R} - \overline{X^U}\right) + \left(\hat{\beta}^R - \hat{\beta}^*\right)\overline{X^R} + \left(\hat{\beta}^* - \hat{\beta}^U\right)\overline{X^U}, \tag{5}$$

In which $\hat{\beta}^U$ and $\hat{\beta}^R$ are recovered from the separate wage equations of the rural and urban samples and $\hat{\beta}^*$ is a vector of coefficients from a pooled model over both samples including a dummy variable identifying the populations. The left hand side of eq. 5 is the raw wage gap, the right hand side consists of the explained part (difference in characteristics) and the unexplained part (differences in coefficients). To determine differences in returns to human capital endowment, the vector is weighted by the

coefficients vector of the rural population. To identify the contribution of the human capital variables separately, we decompose the rural–urban wage differential in detail.

4. Data

We use the longitudinal Mexican Family Life Survey (MxFLS, or ENNVIH) consisting of approximately 8,440 interviewed Mexican households and 35,000 individuals in 2002, 2005 and 2009. It is representative at the regional, urban–rural and state levels and contains information on individuals, households and communities. The questions cover a variety of topics such as labour market status, family characteristics, education, household income, health and self-evaluations.[5]

This study uses *only* the 2005 cross-section (MxFLS-2) because earnings information is inconsistent in 2002, in which about 20% of salaried workers have non-positive wages. The reasons for this appear not to be due to idiosyncratic measurement error but rather due to interviewer mistakes and the like. Finally, we do not use the last wave (2009–2012) because the survey data was collected over a three year period due to problems of tracking the panel individuals and would likely contain substantial measurement error.[6]

The data is restricted to men and women aged 16–65 years, excluding self-employed workers, full-time students and the seriously ill. The final sample consists of almost 10,000 individuals of whom 40% live in rural areas, explicitly, in an area with less than 2,500 inhabitants. The detailed distribution of the workforce is displayed in Table 1.

Those "not working" include those not employed in the traditional sense as well as those working but without pay. (The share of those working without pay is quite small, at less than 5%. Robustness checks without those individuals do not change the results considerably.) Those not working comprise 51% of the urban population and 64% of the rural population. In rural areas 36% are salaried workers of whom 75% work informally. In urban areas 49% have salaried employment, of which 60% is informal.

Unfortunately, we cannot control for differences in costs of living between rural and urban areas directly since consumer price indices (CPI) for Mexico are based on information collected in urban areas. Other recent papers are also faced with this CPI data limitation (Fernandez-Huertas Mortaga, 2013) and appear to focus on quarterly time-variation in prices between 2000 and 2004. Also, there was no information in the data set which could have been used as an alternative to the CPI for measuring costs of living. However, we include indices of health, education and income levels at the municipality level which are used to calculate the Human Development Index or HDI (UNDP, 2008). In a single cross-section and in addition to state indicators, these

Table 1 Distribution of individuals by sectors

	Urban		Rural	
	Mean	Std.Dev.	Mean	Std.Dev.
Not working	0.52	(0.50)	0.64	(0.48)
Informal salaried	0.28	(0.45)	0.28	(0.45)
Formal salaried	0.20	(0.40)	0.08	(0.27)
N	5623		3825	

Authors' calculations based on MxFLS-2

indicators should be highly correlated with price levels and should account for structural economic differences between the regions.

The *legal* definition of the informal sector implemented here is based on the nature of the contract an employee has with his employer. The person is considered a formal worker, if the employee registered with the social security institute (IMSS) or is a government worker (ISSSTE[7]), and an informal worker otherwise.[8] This *legal* definition is also used by, e.g., Bosch & Maloney (2007) and Bargain & Kwenda (2009), and usually considered as being more precise than definitions based on, for example, firm size. Registered workers are eligible to social security benefits which include health insurance, pension, child care, housing loans, life and work-risk insurance and access to sports and cultural facilities. Moreover, formal employees are legally protected by firing regulations and severance pay.

Our key dependent variable is *log hourly wage* which is constructed by dividing reported average monthly earnings by 4.33 and the reported average hours worked per week. Individuals who failed to report positive wages (about 2%) and the top and bottom percentiles of the wage distribution were dropped from the sample.

The main independent variables are experience, education and cognitive ability. Experience is modelled as Mincerian potential experience (age minus years of schooling minus 6) because the full employment history is not available in the data. The individuals are divided into two education groups, i.e. education up to compulsory level (0–9 years of schooling) or more, including high school and university graduates. A special feature of the MxFLS is that a Raven's test which measures an individual's cognitive ability was carried out with almost every interviewee.[9] In the economic literature that deals with returns to education, it is argued that an individual's educational achievement is influenced by his or her intelligence or ability and the exclusion of a measure of intelligence would lead to endogeneity bias in wage regressions (Card, 1999; Psacharopoulos, 1994). The inclusion of the test score should, therefore, lower the pure education estimates.

The included individual characteristics are age, marital status, subjective health, dummies for being the household head and belonging to an indigenous group. Finally, included family characteristics are household size, number of elderly and infants in the household and being a farm owner.

Table 2 provides descriptive statistics of these variables. It can be seen that the average years of work experience are higher in rural areas than in urban areas. This pattern is very similar in the formal and the informal sector with about 22–24 years in rural and about 20–21 years in urban areas. It appears that the differences in years of experience are driven by differences in years of education and are not due to age differences, as the age profiles do not differ largely between rural and urban residents. Years of work experience are highly correlated with age because we use "potential experience". After discussing the main results, we will also discuss some robustness checks which show that the results for returns to experience differ from those for age.

Notably, the share of high-educated workers is very different between sectors. The largest share of high-educated workers is in the urban formal sector with 43% of all workers. In the urban informal sector, 32% are university educated, 28% in the formal rural sector and only 10% of the informal workers in rural areas have attended high

Table 2 Descriptive statistics by sector and locality

	Informal				Formal			
	Urban		Rural		Urban		Rural	
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Hourly wage	23.40	22.01	17.12	17.81	29.98	25.03	24.07	20.85
Female	0.37	0.48	0.25	0.43	0.39	0.49	0.29	0.45
Married	0.51	0.50	0.52	0.50	0.59	0.49	0.56	0.50
Indigenous	0.07	0.25	0.17	0.37	0.06	0.25	0.11	0.31
HH head	0.46	0.50	0.52	0.50	0.50	0.50	0.52	0.50
High education	0.28	0.45	0.10	0.31	0.43	0.50	0.32	0.47
Age 16–25	0.25	0.44	0.25	0.44	0.18	0.38	0.20	0.40
Age 26–35	0.28	0.45	0.27	0.44	0.33	0.47	0.31	0.46
Age 36–45	0.25	0.43	0.25	0.43	0.29	0.45	0.26	0.44
Age >46	0.22	0.41	0.23	0.42	0.21	0.40	0.23	0.42
Experience	21.04	13.26	23.75	13.97	20.37	11.36	21.95	12.63
Hours/year	2101.37	958.78	1976.26	991.16	2283.89	801.48	2193.66	921.60
Raven test	0.55	0.23	0.49	0.24	0.59	0.23	0.54	0.24
Honest	0.81	0.39	0.80	0.40	0.83	0.37	0.82	0.39
Risky	0.37	0.48	0.39	0.49	0.38	0.48	0.41	0.49
Health	2.70	0.64	2.66	0.63	2.80	0.63	2.71	0.70
HH size	9.96	4.56	10.65	4.94	9.39	4.18	9.92	3.97
Nr. of infants	0.38	0.65	0.40	0.65	0.30	0.57	0.38	0.66
Nr. of elderly	0.35	0.89	0.40	0.91	0.32	0.86	0.46	1.04
Farm	0.05	0.22	0.20	0.40	0.03	0.17	0.22	0.42
HDI health	0.91	0.05	0.84	0.06	0.92	0.04	0.85	0.07
HDI education	0.85	0.04	0.80	0.06	0.86	0.03	0.82	0.06
HDI income	0.75	0.07	0.66	0.09	0.77	0.06	0.69	0.08
N	1594		1077		1129		298	

Authors' calculations based on MxFLS-2. Numbers are mean values and standard deviations

school and/or university or college. Furthermore, the urban workforce performs better in the Raven's test score. These observations suggest the existence of self-selection into formal employment in rural and urban areas based on components of human capital endowment. Also, differences between rural and urban workers exist with regard to personality traits such as risk attitudes and honesty.

5. Results

5.1. All workers

Table 3 shows the OLS results of the wage regression for the whole sample. In column 1, we identify a significant urban wage premium of 10%.[10] This finding is entirely consistent with Glaeser & Maré (2001) using U.S. data. The wage regression for all salaried workers in the sample is extended by interaction terms of the human capital variables with the urban residence dummy. Only the work experience interaction coefficients are significant and suggest that experience is more highly rewarded in urban areas than in rural areas. These findings are further supported by the separate wage equations for rural and urban workers (columns 3 and 4). While the return to one additional year of

Table 3 Wage regressions for all, rural and urban workers

	All	All	Rural	Urban
Urban	0.104***	−0.064	–	–
	(0.026)	(0.086)		
Exp × Urban	–	0.013**	–	–
		(0.006)		
Exp2 × Urban	–	−0.000*	–	–
		(0.000)		
High edu. × Urban	–	−0.009	–	–
		(0.053)		
Raven × Urban	–	0.028	–	–
		(0.086)		
Experience	0.018***	0.009*	0.006	0.022***
	(0.003)	(0.005)	(0.005)	(0.004)
Experience2	−0.000***	−0.000**	−0.000*	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
High education	0.231***	0.242***	0.165**	0.239***
	(0.027)	(0.051)	(0.064)	(0.030)
Raven test	0.141***	0.120*	0.119*	0.159***
	(0.042)	(0.068)	(0.069)	(0.053)
Formal	0.127***	0.126***	0.141***	0.105***
	(0.021)	(0.021)	(0.044)	(0.024)
Other characteristics	Yes	Yes	Yes	Yes
State dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Occup. dummies	Yes	Yes	Yes	Yes
N	4099	4099	1376	2723
R2	0.405	0.406	0.387	0.388

* p <0.10, ** p <0.05, *** p <0.01

Robust standard errors in parentheses. *, ** and *** denote significance level of 10%, 5% and 1%, respectively. 15 state dummies, 23 industry dummies and 18 occupation dummies included

work experience is 2.2% in urban areas, it is not significantly different from zero in rural areas. We claim that higher rewards for work experience in urban areas may play a role in the decision to stay in an urban area given one currently lives there, or to migrate to a city given one currently lives in the countryside. To identify the role that experience has in explaining the wage differential, we carry out a detailed decomposition analysis. Before we describe those results, we will discuss the findings of the formal/informal sector wage analyses.

5.2. Formal vs. Informal workers

As mentioned in the literature section, several authors have found wage differentials between formal and informal workers. We show that this differential also exists when distinguishing between rural and urban workers.

Table 3, columns 3 and 4 show that the formal sector differential exists in both the rural areas (14%) and in the cities (10%). This is new evidence for Mexico, as

earlier studies on the formal wage gap in Mexico were based solely on the National Urban Employment Survey which did not even cover rural households until recently.

The results of the separate wage equations for formal and informal sector workers support what we have found based on the wage regressions for all workers, but suggest quantitative differences between the sectors (Appendix: Tables 7 and 8). Among the regression results for informal workers we can see that a significant urban wage premium exists. Separating the sample into rural and urban workers further supports the hypothesis that human capital is differently rewarded in both regions. We find a high, significant return to high education of about 17% in rural and 19% in urban areas (Appendix: Table 7, columns 5 and 7). For informal workers there is no return to cognitive ability, as the Raven test coefficient is not significantly different from zero. For informal workers in urban areas the return to experience is 1.5% higher than for informal rural workers (column 3). No other human capital related factors are significantly differently rewarded in urban than in rural areas. Figure 3 shows the return to experience graphically for informal workers and Fig. 4 for formal workers. Note that the returns to experience are insignificant for rural workers in the informal sector (Appendix: Table 7, columns 5 and 6) while in the formal sector no significant difference in returns to experience can be found between rural and urban workers (Appendix: Table 8, columns 5–8). Furthermore, for formal workers, the results suggest that human capital endowments other than education are not productive in rural areas as the coefficients are not significantly different from zero. We will decompose the wage differential in the next section to uncover the role the different indicators of human capital play in the determination of rural–urban wage differentials.

In essence, the results suggest that experience is simply not rewarded in rural, only in urban areas, which can only increase the incentive to migrate to urban areas. As a consequence, we expect the informal sector will increase in urban areas, assuming that this

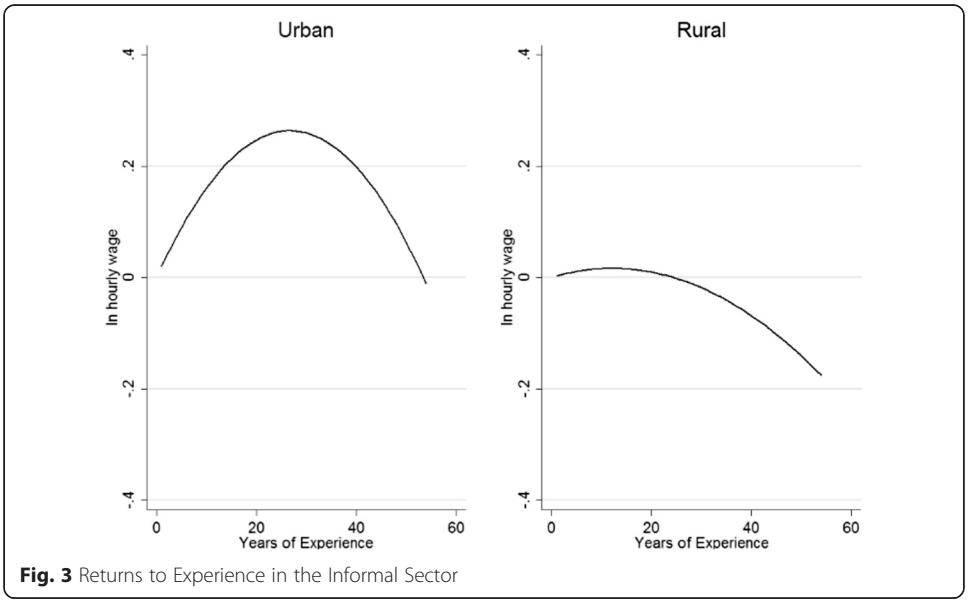

Fig. 3 Returns to Experience in the Informal Sector

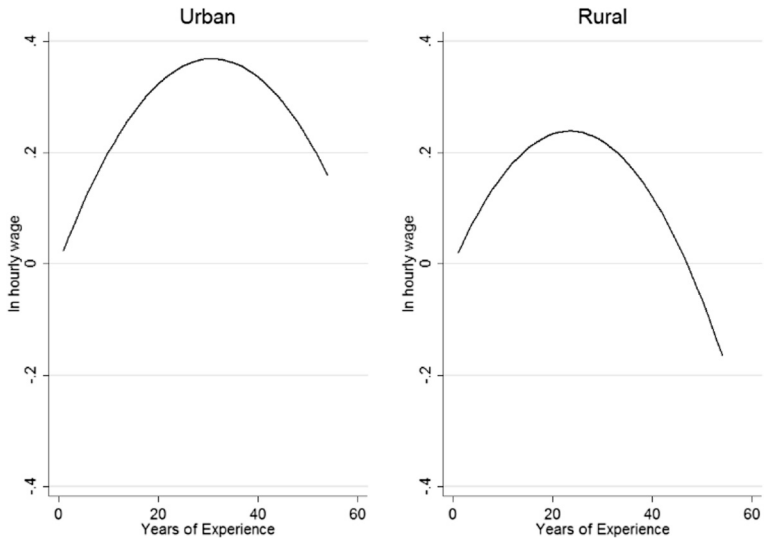

Fig. 4 Returns to Experience in the Formal Sector

additional labour supply is not met by equally rising labour demand in the formal sector (the classic problem of large cities in developing countries).

5.3. Blinder-Oaxaca decomposition

Using Blinder-Oaxaca decomposition techniques, we can identify whether the rural–urban wage differential is driven by observable differences in human capital endowments between rural and urban workers. Appendix: Table 6 indicates that the overall difference between urban and rural wages is 32% for informal workers and 23% for formal workers.

About one third of the differential in both the informal and the formal sector can be explained by observable characteristics. The detailed decomposition results are displayed in Table 4 which focuses on education, experience and individual cognitive ability. The results for informal workers show that differences in experience, education and cognitive ability largely explain the wage gap. By looking at the unexplained part, differences in coefficients of work experience account for the largest share of the unexplained part; the quadratic coefficients are 0.389 and −0.185 respectively and are statistically significant at the 5% level. Returns to education and cognitive ability do not play a role in the unexplained part of the rural–urban wage differential, nor do the returns to other characteristics. Hence, there are significant differences in returns to experience, even after controlling for cognitive ability, other observable characteristics and self-selection.

In the formal sector, this difference in coefficients (unexplained part) exists neither for experience nor for any other variable. Solely the differences in the average of the components of human capital endowment (education, experience and cognitive ability) explain the wage gap in the formal sector. This finding supports the hypothesis that urban firms are more human capital intensive and that they reward work experience higher relative to rural firms.

Table 4 Wage decomposition by formal/informal sector

Informal sector	Explained	Unexplained
Experience	−0.038***	0.389**
	(0.012)	(0.167)
Experience2	0.040***	−0.185**
	(0.012)	(0.091)
High education	0.032***	0.003
	(0.007)	(0.013)
Raven test	0.006*	0.006
	(0.003)	(0.054)
Other	0.180***	−0.115
	(0.026)	(0.113)
N	2671	
Formal Sector	Explained	Unexplained
Experience	−0.036*	0.058
	(0.020)	(0.241)
Experience2	0.039**	0.035
	(0.019)	(0.130)
High education	0.036***	0.037
	(0.010)	(0.034)
Raven test	0.012**	0.085
	(0.005)	(0.087)
Other	0.023	−0.065
	(0.029)	(0.189)
N	1428	

Standard errors in parentheses. *, ** and *** denote significance level of 10%, 5% and 1%, respectively. *OLS* ordinary least squares. The decomposition is formulated from the viewpoint of the rural population. For the underlying regressions see wage regression tables. Other includes 15 state dummies, work, individual and household characteristics

5.4. Robustness checks

We conduct a series of robustness checks to ensure that inconsistencies in the data set do not drive our results and that we did not oversee important differences between groups or selection processes. Therefore, we apply a Multinomial logit model in the first step in which the labour market choices are formal salaried employment, informal salaried employment and not working. The calculated inverse Mill's ratios from this model are included in the main wage equation. We neither find qualitative nor significant quantitative changes in the main results.[11]

Another potential pitfall concerns the definition of the education variable. Therefore, all regressions are estimated including a different education variable, which is equal to one if the individual has attained university and equal to zero if educational attainment was up to only high school level. In all regressions, the education coefficient was larger and still significant, but did not change the results qualitatively.

One drawback of the dataset is that we cannot measure actual work experience as we do not have a sufficiently detailed job history. As work experience is measured by age minus years of education minus 6, the correlation between our work

experience variable and age is high (about 97%). To address the concern that we are not actually measuring the returns to potential work experience but the returns to age, we estimated all regressions including age instead of experience. The coefficients are larger for age than for experience and there are no significant differences between rural and urban workers. Hence, we conclude that our experience variable is actually measuring the effect of work experience and not simply the returns to age.

Moreover, all wage equations were estimated (a) including a cubic term of experience and (b) with experience as a linear term. For some groups of workers, the coefficients were also significant, but the findings do not differ qualitatively from the results outlined above.

5.5. Migrants' labour market performance

In a supplemental analysis, we investigate the labour market performance in terms of wages of rural-to-urban migrants to see whether it is in fact profitable for a rural worker to migrate to a city, given s/he could find employment in both rural and urban areas. Therefore we introduce a dummy variable which is equal to one if the individual has lived in a rural area at the age of 12 and lives in an urban area at the time of interview and zero otherwise with the aim of proxying the migration status of an individual. We add this variable to the regressors in the main wage regressions as well as in the first-step selection equation. In the following, we will only discuss the results for the informal and formal sector separately as we again find noteworthy differences between sectors concerning rural-to-urban migrants' labour market performance.

Our main interest lies in the analysis of rural-to-urban migrants' reward for human capital in the urban areas compared to all other individuals in urban areas, including urban-urban migrants and non-migrants. Hence, including the migrant variable in the wage regression will show whether migrants experience an earnings penalty or earnings premium and whether this differs by components of human capital endowment. We find a wage gap for migrants compared to non-migrants in the informal sector but not in the formal sector (see columns 1 and 3 in Table 5).[12] Interacting the rural-to-urban migrant dummy with the components of human capital endowment (columns 2 and 4) reveals some important information on how different rural-to-urban migrants profit from migration and whether migrating is reasonable in terms of wages. On the one hand, rural-to-urban migrants who have obtained a university degree enjoy an average wage premium of 14.7% compared to other high-educated workers. This coefficient is statistically significant at the 5% level (one tailed test), even when controlling explicitly for cognitive ability. Interestingly, rural-to-urban migrants do not have different returns to experience than other urban workers. The coefficient is almost zero and insignificant. In the formal sector we cannot find wage gaps between rural-to-urban migrants and other urban workers.

From this we conclude that the high returns to experience found in the previous sections are indeed a *pull factor* into urban informal labour markets away from poor earnings prospects in rural areas. Evidence on whether this has positive or negative effects on the rural population is mixed. While Boucher et al. (2005) find that internal migration increases the schooling level of the rural population through high-skill family

Table 5 Rural-to-urban migrants' labour market performance

	Informal		Formal	
Migrant	−0.081**	−0.195	−0.019	−0.183
	(0.035)	(0.135)	(0.036)	(0.162)
Migrant × Exp.	–	−0.002	–	0.004
		(0.009)		(0.011)
Migrant × Exp2	–	0.000	–	−0.000
		(0.000)		(0.000)
Migrant × High Educ.	–	0.147*	–	0.077
		(0.083)		(0.076)
Migrant × Raven score	–	0.170	–	0.075
		(0.144)		(0.157)
Experience	0.020***	0.021***	0.023***	0.023***
	(0.005)	(0.006)	(0.006)	(0.007)
Experience2	−0.000***	−0.000***	−0.000***	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
High education	0.189***	0.149***	0.306***	0.284***
	(0.045)	(0.052)	(0.041)	(0.047)
Raven test	0.104	0.016	0.278***	0.250**
	(0.073)	(0.101)	(0.078)	(0.099)
Hours/year	−0.000***	−0.000***	−0.000***	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.105***	0.102***	0.025	0.022
	(0.035)	(0.035)	(0.036)	(0.036)
Indigenous	−0.058	−0.053	0.008	0.008
	(0.068)	(0.068)	(0.071)	(0.071)
Female	−0.160***	−0.160***	−0.068	−0.070
	(0.046)	(0.046)	(0.044)	(0.044)
HH head	0.007	0.013	0.057	0.055
	(0.042)	(0.042)	(0.047)	(0.047)
HH size	−0.004	−0.004	−0.010**	−0.010**
	(0.004)	(0.004)	(0.004)	(0.004)
Constant	3.318***	3.372***	3.796***	3.860***
	(0.170)	(0.178)	(0.164)	(0.174)
State dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Occup. dummies	Yes	Yes	Yes	Yes
N	1594	1594	1129	1129
R2	0.307	0.310	0.480	0.481

Robust standard errors in parentheses. *, ** and *** denote significance level of 10%, 5% and 1%, respectively

migration networks, McKenzie & Rapoport (2011) find that (U.S.) migration leads to lower educational attendance and attainment in rural migrant households. Conversely, the literature shows that remittances from international migrants serve as insurance against income shocks (Amuedo-Dorantes & Pozo, 2006). However, the latter two articles focus on international migration and are not necessarily applicable to internal

migration. Generally, the investigation of consequences of *internal* migration for the rural Mexican population has not received much attention in the literature thus far, as compared to Mexican external migration to the United States.

6. Discussion

The findings provide evidence that rural–urban wage differentials are prevalent in Mexico and that differences exist in the decomposition of wages between formal and informal workers. Observed differences in all human capital related factors explain a large part of the rural–urban wage gap in the informal and formal sector. Additionally, in the informal sector, returns to experience are much lower for rural than for urban workers, even after controlling for a large number of observable characteristics. When considering that only a small part of the formal sector resides in rural areas and wages are significantly lower in rural areas, small returns to experience are definitely a *push factor* out of the rural and into the urban labour market, seemingly preferably and possibly easier into the informal sector when the individual is endowed with at least some years of experience. Furthermore, the results are entirely consistent with the macroeconomic picture described in the introduction. If the observed wage pattern continues to exist, low returns to experience will not only act as a push factor away from rural areas and into cities but also serve as an impediment for return migration. The fact that rural-to-urban migrants do not have lower returns to experience than other workers supports this result. Furthermore, rural-to-urban migrants enjoy an average wage premium for high levels of education. This will have further consequences for the existence of the informal sector. Assuming that formal jobs do not materialize as quickly as the rural population migrates and the social security protection system does not change fundamentally, then the size of the informal sector and unemployment is likely further to increase in the cities.

Although we are able to control for a large number of personal characteristics, it is likely that unobserved person and firm characteristics explain at least parts of the wage differential. As various authors have shown, firms in the cities are more productive and, hence, pay higher wages (Glaeser & Maré, 2001; Gould, 2007). Thus, it seems plausible that work experience is only rewarded in urban firms rather than in rural firms, which is supported by our results. This will be an incentive for individuals to migrate to the cities to accumulate human capital in the form of work experience and be paid accordingly, completely consistent with Lucas (2004).

An explanation for low returns to experience in general could be high labour mobility which is prevalent in urban Mexico (e.g. Maloney, 1999; Gong & van Soest, 2002; Xiaodong et al. 2004). Numerous and frequent job changes may impede a worker's accumulation of valuable work experience and be a signal of low productivity for an employer. Although not testable with the data set at hand, it is likely that labour mobility is also high in rural Mexico. A combination of high labour mobility and low productivity in rural Mexico may be responsible for low returns to experience. However, it must be stressed that we control explicitly for cognitive ability in the regressions.

The findings give direction for policy in many respects. First, there is a need for the government to attract more firms in rural areas that value work experience or where worthy experience can be obtained to create incentives for potential migrants to stay. A few examples of foreign or international firms which settled in rural areas and provided

at least some economic and social development in the areas around the factory already exist. For instance, with the settling of a Volkswagen plant near Puebla in the 1960s, a previously poor rural area was turned into a flourishing city by improving the infrastructure and providing jobs for skilled and unskilled workers. Suppliers settled in a nearby business park, offering more and diverse employment possibilities. Waldkirch et al. (2009) provide evidence that an increase in foreign direct investment in Mexico is associated with more employment, especially in exporting and manufacturing industries. Furthermore, the presence of large inter- or multinational firms from developed countries helps to improve or at least maintain the health and safety standards, the adherence of human and labour rights and a relatively high wage level. Cabral et al. (2010) provide evidence for the latter in Mexico. Generally though, there seems to be a tendency towards improvement of regional labour markets through the settlement of particular large firms with an international background (Spar, 1998). An increased possibility for employees to be registered with IMSS goes hand in hand with the creation of employment by the settlement of a large firm. Raw descriptive statistics show that the average number of employees in a firm that employs an informal worker is 50, while a formal worker has on average 119 co-workers.

The attraction of large firms with an international background is however insufficient in itself to increase formal employment. As Levy (2008) explains, there are several incentives *not to register* and simply continue to work informally. One is the high price for social security coverage which amounts to about 30% of a worker's wage in the lowest three deciles of the wage distribution. Furthermore, social security benefits have to be bought as a bundle even if the worker does not want or need all components. Other incentives are the various social protection benefits (health insurance, housing subsidies, pension schemes, access to day care centers and life insurance) which can be bought independently and are almost free for poor workers when they are not registered with IMSS. Importantly, non-registration goes hand-in-hand with the avoidance of payroll taxes. These are reasons why the Social Security Law is violated in a widespread manner, leading to a persisting large share of informal employment.[13] Hence, policies need to address the incentives to work formally, for example by changing the social insurance schemes.

Furthermore, reducing high labour turnover may enable workers to specialise and inherently become more productive. Possible reasons are short legal periods of notice and severance for workers who terminate their job by choice. The labour market reforms currently discussed in Mexico should attend to these two points. Another possibility to add value to work experience would be certified on-the-job training. While on-the-job training enhances a worker's skills, it may also increase loyalty to the firm. In the literature review by (Bartel, 2000), a strong tendency towards high employer returns to investment in on-the-job training is shown. In Mexico, loyalty towards the employing organisation is low (Miller et al. 2001). Instead, loyalty to one's supervisor is strong (Martinez & Woodruff, 2007), leading to a spiral of job mobility as a worker is likely to terminate his job when his supervisor leaves the firm.

7. Conclusion

Using a nationally representative household survey, this study investigates the differences in returns to human capital endowments between the formal and informal sectors in Mexico, and distinguishes, to our knowledge for the first time, between rural

and urban workers in these formal/informal sectors. Using the detailed, representative Mexican Family Life Survey (MxFLS) it has been shown that a large urban wage premium exists in Mexico and that returns to experience are small in rural areas compared to urban areas. Applying Blinder-Oaxaca decomposition techniques and correcting for potential selection bias from sorting into the formal sector, i.e. registered employment, this study demonstrates that in the informal sector the differences in returns to components of human capital endowment, such as work experience, education and cognitive ability, explain large parts of the rural–urban wage gap. Furthermore, the unexplained part is solely driven by the difference in returns to work experience between rural and urban workers. Hence, the more work experience a worker has accumulated, the higher is his monetary disadvantage to work in a rural area as compared to an urban area. In the formal sector, only differences in education levels contribute to the explanation of the wage gap and we find no differences in coefficients. Furthermore, we find no difference in returns to experience for rural-to-urban migrants compared to non-migrants and even a positive wage premium for migrants with high education, supporting the results by Boucher et al. (2005).

The findings suggest that there is a large incentive for rural residents with some years of work experience to migrate from rural to urban areas in Mexico where they receive substantially higher rewards for work experience. We believe that, if the observed wage pattern continues to exist, the low returns to experience in rural areas will not only act as a push factor away from rural areas into large cities, but also serve as an impediment for return migration. Return migration, as shown in the literature, can however lead to increases in educational attainment (Boucher et al. 2005). Moreover, assuming that the number of rural-to-urban migrants increases faster than formal jobs can materialise, which seems realistic given the low incentives to register, unemployment, underemployment or informal employment is likely to increase in the cities. This would lead to further exacerbation of economic and social problems in these large cities and continuing lower than optimal economic growth.

Our study shows that it is important to separate the population into different groups, especially distinguishing between rural and urban workers as their incentives and outcomes differ largely, even independently of personal observable characteristics. To our knowledge, this is the first study for Mexico to separate the Mexican workforce by formal/informal status *and* urban/rural location and decomposes the wage gap with regard to human capital endowments, thereby being able to identify the key explanatory role of work experience.

The results provide policy immediate and implementable policy implications. In order to counteract rural-to-urban migration, we suggest a regional development plan involving the strategic attraction of particular large, international firms and FDI to rural areas. This brings investments in infrastructure, creates jobs and facilitates labour law compliance. Furthermore, large firms tend to pay relatively high wages and are more likely to register their workers with the IMSS, which in turn can reduce poverty and welfare dependency. In such firms, workers can accumulate work experience and become more productive for which they will then be paid accordingly. Another method of counteracting rural-to-urban migration would be to reduce labour turnover which is currently high because of informal work relationships which imply little provision of on-the-job-training, high loyalty to the supervisor rather than the employing organisation,

short periods of notice, low severance pay and low investments in firm-specific human capital (and the resulting loss of potential efficiency or productivity gains). Low returns to experience are likely to be the result of this high labour turnover – and need to be targeted.

Endnotes

[1]The percentage of the population living below the national poverty line was 47% in 2005 and increased to 52.3% in 2012 (World Bank Data) http://data.worldbank.org/country/mexico.

[2]The commonly used Mexican data is the National Urban Employment Survey (ENEU), which has only recently been expanded to rural areas.

[3]See e.g. (Michaelsen 2012) for a discussion the levels of violence in the early 2000s in Mexico and (Michaelsen & Salardi, 2014) for a study of the consequences of drug-related violence in Mexico after 2005.

[4]See e.g. Magnac (1991) for evidence of self-selection into the informal sector.

[5]More information can be found at http://www.ennvih-mxfls.org/.

[6]Furthermore, the data providers informed us that interviewees were less willing to reply to sensitive questions, such as income variables. We believe that this issue is related to the increase in organized crime related violence, spreading throughout Mexico since 2007. Moreover, these circumstances have let to new migration patterns (Rios, 2014), which would not be adequately modeled in this analysis.

[7]The ISSSTE is the social security institution for public sector workers and the armed forces. As not all public workers are registered with ISSSTE, for instance public workers in educational institutions and workers of the public electricity companies, it is impossible to exclude all public workers and hence they comprise the group of formal workers together with all workers who are registered with IMSS.

[8]As Maloney (1998) Bosch & Maloney (2008) and Levy (2008) point out, workers, especially poor workers, are highly mobile between sectors and hence workers can actually not be labelled as formal workers or informal workers *per se*. For simplicity we use these terms here but actually, when referring to an informal (formal) worker, we mean an individual whose current job at the time of data collection is in informal (formal) employment.

[9]See Raven & Court (2003) for more information about the test.

[10]Since we do not find selection bias, we only discuss OLS regression results here. The probit and Heckman regression results are available from the corresponding author on request.

[11]We do not further discuss this methodology here as we are aware of the violation of the assumption of independent irrelevant alternatives in the Multinomial logit model. The result tables of the robustness checks can be obtained on request by the corresponding author.

[12]We also estimated several models controlling for potential selection bias in the migrant coefficient. Since no model provided evidence of such selection bias, we report the OLS results here only.

[13]See (Levy, 2008) for a detailed description of Social Programs in Mexico and their outcomes.

Appendix

Table 6 Decomposition overall results

	All	Informal	Formal
Urban	2.980***	2.869***	3.136***
	(0.014)	(0.018)	(0.021)
Rural	2.629***	2.551***	2.911***
	(0.019)	(0.021)	(0.041)
Difference	0.351***	0.319***	0.225***
	(0.024)	(0.028)	(0.046)
Explained	0.245***	0.220***	0.074**
	(0.023)	(0.027)	(0.035)
Unexplained	0.106***	0.099***	0.150***
	(0.026)	(0.032)	(0.037)
N	4099	2671	1428

Standard errors in parentheses. ** and *** denote significance level of 5% and 1%, respectively. The decomposition is formulated from the viewpoint of the rural population. For the underlying regressions see wage regression tables

Table 7 Wage regressions for informal sector workers

	All OLS	All Heck	All OLS	All Heck	Rural OLS	Rural Heck	Urban OLS	Urban Heck
Urban	0.099***	0.093***	−0.051	−0.048	–	–	–	–
	(0.032)	(0.034)	(0.103)	(0.103)				
Exp × Urban	–	–	0.015**	0.014**	–	–	–	–
			(0.007)	(0.007)				
Exp2 × Urban	–	–	−0.000**	−0.000**	–	–	–	–
			(0.000)	(0.000)				
High edu. ×Urban	–	–	−0.035	−0.036	–	–	–	–
			(0.074)	(0.073)				
Raven × Urban	–	–	−0.009	−0.009	–	–	–	–
			(0.105)	(0.106)				
Experience	0.014***	0.016***	0.005	0.007	0.003	0.004	0.020***	0.023***
	(0.004)	(0.004)	(0.005)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)
Experience2	−0.000***	−0.000***	−0.000	−0.000*	−0.000	−0.000	−0.000***	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
High education	0.181***	0.174***	0.213***	0.206***	0.173**	0.150**	0.189***	0.193***
	(0.038)	(0.037)	(0.066)	(0.066)	(0.077)	(0.076)	(0.045)	(0.045)
Raven test	0.106**	0.111**	0.109	0.113	0.093	0.101	0.106	0.110
	(0.053)	(0.054)	(0.079)	(0.081)	(0.080)	(0.081)	(0.071)	(0.074)

Table 7 Wage regressions for informal sector workers *(Continued)*

Hours/year	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.098***	0.025	0.098***	0.035	0.053	0.002	0.107***	−0.007
	(0.027)	(0.062)	(0.027)	(0.062)	(0.045)	(0.072)	(0.035)	(0.098)
Indigenous	−0.063	−0.073*	−0.063	−0.072*	−0.107**	−0.115**	−0.043	−0.060
	(0.042)	(0.044)	(0.042)	(0.043)	(0.054)	(0.058)	(0.075)	(0.071)
Female	−0.200***	−0.408**	−0.201***	−0.381**	−0.285***	−0.497*	−0.160***	−0.401**
	(0.038)	(0.163)	(0.038)	(0.164)	(0.065)	(0.256)	(0.048)	(0.199)
HH head	0.023	0.086	0.023	0.077	0.065	0.124	0.006	0.089
	(0.032)	(0.058)	(0.032)	(0.058)	(0.049)	(0.085)	(0.042)	(0.079)
HH size	−0.001	0.002	−0.001	0.002	0.005	0.007	−0.004	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)	(0.004)	(0.005)
HDI health	0.123	−0.111	0.133	−0.069	−0.308	−0.516	0.350	−0.059
	(0.461)	(0.530)	(0.461)	(0.527)	(0.643)	(0.793)	(0.844)	(0.853)
HDI education	−0.096	−0.148	−0.092	−0.138	−0.723	−0.735	1.271	0.742
	(0.480)	(0.494)	(0.479)	(0.491)	(0.557)	(0.575)	(1.536)	(1.420)
HDI income	1.453***	1.725***	1.462***	1.698***	2.278***	2.579***	0.162	0.634
	(0.356)	(0.425)	(0.355)	(0.424)	(0.499)	(0.640)	(0.705)	(0.804)
Constant	2.102***	1.922***	2.187***	2.027***	2.695***	2.517***	1.702**	1.782***
	(0.333)	(0.362)	(0.338)	(0.366)	(0.448)	(0.516)	(0.733)	(0.683)
Mills Lambda λ	–	0.260	–	0.224	–	0.208	–	0.371
		(0.199)		(0.200)		(0.244)		(0.297)
State dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occup. dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2671	9446	2671	9446	1077	3824	1594	5622
R2	0.338		0.340		0.351		0.312	

Robust standard errors in parentheses. *, ** and *** denote significance level of 10%, 5% and 1%, respectively. *OLS* ordinary least squares, *Heck*: Heckman selection 2nd step. λ is the nonselection hazard variable generated from the probit model. 15 state dummies, 23 industry dummies and 18 occupation dummies included

Table 8 Wage regressions for formal sector workers

	All OLS	All Heck	All OLS	All Heck	Rural OLS	Rural Heck	Urban OLS	Urban Heck
Urban	0.130***	0.141***	−0.003	0.007	–	–	–	–
	(0.044)	(0.053)	(0.179)	(0.169)				
Exp × Urban	–	–	0.000	−0.000	–	–	–	–
			(0.012)	(0.010)				
Exp2 × Urban	–	–	0.000	0.000	–	–	–	–
			(0.000)	(0.000)				
High edu × Urban	–	–	0.008	0.004	–	–	–	–
			(0.080)	(0.080)				
Raven × Urban	–	–	0.119	0.121	–	–	–	–
			(0.161)	(0.158)				

Table 8 Wage regressions for formal sector workers *(Continued)*

Experience	0.023***	0.025***	0.022**	0.024**	0.020*	0.018	0.022***	0.023***
	(0.005)	(0.006)	(0.011)	(0.010)	(0.011)	(0.013)	(0.006)	(0.007)
Experience2	−0.000***	−0.000***	−0.000**	−0.000**	−0.000**	−0.000*	−0.000***	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
High education	0.301***	0.324***	0.297***	0.314***	0.224**	0.176	0.297***	0.313***
	(0.039)	(0.068)	(0.079)	(0.098)	(0.103)	(0.236)	(0.041)	(0.062)
Raven test	0.231***	0.241***	0.143	0.147	0.116	0.098	0.266***	0.276***
	(0.069)	(0.072)	(0.141)	(0.144)	(0.153)	(0.148)	(0.078)	(0.081)
Hrs/year	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.024	0.014	0.024	0.018	−0.052	−0.044	0.031	0.022
	(0.032)	(0.040)	(0.032)	(0.040)	(0.071)	(0.082)	(0.036)	(0.043)
Indigenous	−0.022	−0.022	−0.019	−0.019	−0.164	−0.166	0.035	0.035
	(0.056)	(0.058)	(0.056)	(0.058)	(0.143)	(0.110)	(0.071)	(0.069)
Female	−0.048	−0.076	−0.045	−0.062	0.060	0.100	−0.069	−0.090
	(0.039)	(0.078)	(0.039)	(0.079)	(0.081)	(0.203)	(0.044)	(0.074)
Hh head	0.068*	0.083	0.072*	0.080	0.189**	0.174*	0.057	0.071
	(0.040)	(0.056)	(0.040)	(0.056)	(0.085)	(0.099)	(0.047)	(0.061)
Hh size	−0.005	−0.004	−0.004	−0.004	0.023***	0.023***	−0.010**	−0.009**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.008)	(0.008)	(0.004)	(0.004)
HDI health	−0.648	−0.603	−0.635	−0.604	−0.187	−0.152	−1.145	−1.044
	(0.635)	(0.595)	(0.638)	(0.595)	(1.044)	(0.913)	(0.877)	(0.904)
HDI education	−0.699	−0.663	−0.701	−0.675	−0.706	−0.691	1.045	1.239
	(0.690)	(0.748)	(0.680)	(0.753)	(0.950)	(0.952)	(1.600)	(1.657)
HDI income	1.316**	1.372**	1.311**	1.345**	1.204	1.041	1.227	1.161
	(0.557)	(0.544)	(0.551)	(0.543)	(1.314)	(1.239)	(0.842)	(0.842)
Direction of comp.	−1.113***	−1.114**	−1.140***	−1.140**	–	–	–	–
	(0.182)	(0.537)	(0.183)	(0.536)				
Constant	3.695***	3.482***	3.798***	3.663***	2.811***	3.030***	2.941***	2.662**
	(0.481)	(0.708)	(0.505)	(0.747)	(0.762)	(1.168)	(0.855)	(1.167)
Mills Lambda λ	–	0.056	–	0.033	–	−0.066	–	0.046
		(0.138)		(0.140)		(0.293)		(0.136)
State dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occup. dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1428	9446	1428	9446	299	3824	1129	5622
R2	0.484		0.486		0.597		0.485	

Robust standard errors in parentheses. *, ** and *** denote significance level of 10%, 5% and 1%, respectively. *OLS* ordinary least squares, *HM* Heckman selection 2nd step. λ is the nonselection hazard variable generated from the probit model. 15 state dummies, 23 industry dummies and 18 occupation dummies included

Competing interests
The "IZA Journal of Migration" is committed to the IZA Guiding Principles of Research Integrity. The authors declare that they have observed these principles.

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