The composition of wage differentials between migrants and natives

Panagiotis Nanos [a], Christian Schluter [b,a,*]

[a] Economics Division, University of Southampton, Highfield, Southampton SO17 1BJ, UK
[b] Aix-Marseille Université (Aix-Marseille School of Economics), CNRS & EHESS, Centre de la Vieille Charité, 13002 Marseille, France

ARTICLE INFO

ABSTRACT

We consider the role of unobservables, such as differences in search frictions, reservation wages, and productivities for the explanation of wage differentials between migrants and natives. We disentangle these by estimating an empirical general equilibrium search model with on-the-job search due to Bontemps et al. (1999) on segments of the labour market defined by occupation, age, and nationality using a large scale German administrative dataset.

The native-migrant wage differential is then decomposed into several parts, and we focus especially on the component that we label "migrant effect", being the difference in wage offers between natives and migrants in the same occupation-age segment in firms of the same productivity. Counterfactual decompositions of wage differentials allow us to identify and quantify their drivers, thus explaining within a common framework what is often labelled the unexplained wage gap.

© 2013 Elsevier B.V. All rights reserved.

1. Introduction

The empirical literature on the labour market experience of immigrants often focuses on differences in observable characteristics between migrants and natives to explain wage differentials. Less explored is the role of unobservables, such as differences in search frictions, reservation wages, and productivities. Yet, it is precisely these factors that modern search theory emphasises to be important for wage dispersion. We examine and disentangle the role of these various unobservables in explaining migrant-native wage differentials by adapting to the migrant context the empirical general equilibrium search model with on-the-job search due to Bontemps et al. (1999).

The estimation of this structural model on segments of the labour market defined by occupation, age, and nationality enables us to decompose the native-migrant wage differential into several parts. In particular, we focus on the component that we label "migrant effect", being the difference in wage offers between similar native and immigrant workers in firms of the same productivity. This effect is of interest as we thus control for firm-level differences as measured by their productivities, which have recently been shown using firm-level data to contribute systematically to the wage gap (Aydemir and Skuterud, 2008 in the case of Canada, de Matos (2012) for Portugal, and Bartolucci (2013b) for the German case).[1] One particular advantage of our approach is that we do not require firm-level data (data confidentiality promises usually deny public access), as the productivity distribution emerges as an equilibrium relationship. We estimate the migrant effect on internationally accessible German administrative data, the scientific use file known as IABS which is a 2% subsample of the German employment register. This enables us to contribute to the recent literature on the immigrant-native wage gap as

---

* Corresponding author at: Aix-Marseille Université (Aix-Marseille School of Economics), CNRS & EHESS, Centre de la Vieille Charité, 13002 Marseille, France. Tel.: +33 44 2935993; fax: +33 44 2389585.

E-mail addresses: P.Nanos@soton.ac.uk (P. Nanos), c.schluter@soton.ac.uk, christian.schluter@univ-amu.fr (C. Schluter).

[1] The migrant effect corresponds to within-firm wage differentials of workers with similar observable characteristics reported in these papers.

follows. While the role of observables is well understood for explaining the wage gap, the role of unobservables is less so. Such wage gaps arise when, for instance, migrants have systematically lower reservation wages (whose role is examined in detail in Albrecht and Axell (1984)), or when firms in a migrant-native segmented labour market (which we discuss below) are less productive in the migrant segment, or when wage-posting firms in one segment derive greater monopsony power from e.g. greater search frictions. Our analysis focuses on the roles of differences in the job turnover parameters, behavioural differences induced by differences in reservation wages, and productivity differences.[2] Within a common framework, we establish the relative importance of each of these factors. Having estimated the model's parameters and thus the actual wage gap and migrant effect, we quantify the roles of the various unobservables in several counterfactual experiments.

The structural model is estimated on a large German administrative panel. Germany is a particularly interesting and relevant case since it hosts the largest numbers of foreign nationals in Europe, and immigration is known to be predominantly low-skilled. According to Eurostat, 7.13 million foreign nationals resided in Germany in 2010, about 8.7% of the total population. The size of the IABS allows us to stratify the analysis by nationality, occupation and age. The resulting subsamples are sufficiently large to permit precise estimation of the model's structural parameters. Moreover, since this is administrative data, the usual concerns about the quality of survey data in a migrant context (sample size, measurement accuracy, and use of retrospective information) are absent.

We briefly describe some aspects of our applications of the structural model. In order to control for heterogeneity in observables, we follow common estimation practice in the search-theory literature by partitioning the labour market into many segments. These segments are defined in terms of occupation, age, and nationality.[3] Given the skill profile of migrants, we consider only the low and medium skill occupations. Each segment is thus assumed to be potentially a separate labour market, characterised by its own job turnover parameters (the job arrival and separation rates). Turning to the unobservables (for the econometrician), firms in each segment differ in terms of productivity, and workers differ in terms of reservation wages. Such reservation wage heterogeneity is plausible given the absence of a legal minimum wage in Germany, and the fact that the location decisions of labour migrants in Roy-style models are usually based on comparisons of expected incomes in source and host country. Migrants might trade-off wage and non-wage job characteristics differently to natives, given their well-known clustering. Besides this preference component, reservation wages also feature an institutional one, but this is less important as contributory unemployment insurance benefits are independent of immigrant status.

The assumption of separate markets for natives and immigrants and the associated notion of job segmentation conforms to existing international empirical evidence. For instance, using Portuguese data, de Matos (2012) shows that immigrants "work in different industries and occupations than natives" (p. 10), and the sorting of immigrants is also observed by Aydemir and Skuterud (2008) for Canada. As regards Germany, D'Amuri et al. (2010) observe that recent immigrants are significantly more likely to compete with established immigrants rather than with natives. Velling (1995) is an early paper to report "evidence of strong occupational segregation" (p. 1) between natives and immigrants. This finding has recently been reaffirmed by Lehmer and Ludsteck (2011), Brücker and Jahn (2011), Bartolucci (2013b), and Glitz (2012) who concludes that "ethnic segregation [..] is endemic in the German labour market" (p. 15).[4] This segmentation is also consistent with the evidence of strong occupational immobility we find in our data (which has also been observed for other countries, e.g. by de Matos (2012) for Portugal).[5]

For each occupation-age segment, we estimate using maximum likelihood the job turnover parameters, the parameters characterising the reservation wage distribution, and the firms' productivity distribution. We find substantial differences in Germany between natives and foreigners. The segment-specific raw average log wage gaps in our data range from 0.09 to 0.45, the overall log wage gap being 0.22, which is in line with reports in the literature for Germany (e.g. Dustmann et al., 2010 report an unconditional average log wage gap of 0.23, Hirsch and Jahn (2012) report a gap of 0.2, while Lehmer and Ludsteck (2011) report predicted wage gaps ranging from 0.08 to 0.44 depending on nationality). Turning to the qualitative implications of our model estimates, we find that migrants experience job separations more often than natives but also find

---

[2] The migrant effect is not synonymous with (taste-based) discrimination as we do not model this explicitly (for two approaches see Bowlus and Eckstein, 2002; Flabbi, 2010). Instead, similar to Bowlus (1997) and Bartolucci (2013a) in the context of the gender wage gap, we have an indirect link: if market discrimination exists and influences behavioural patterns, it will be captured in those parameters, while other avenues of wage-impacting discrimination will be picked up by the productivity distributions. In contrast to costly taste-based discrimination, the new monopsony theory suggests the possibility of profitable monopsonistic discrimination stemming e.g. from differential search friction (Manning, 2003). For instance Barth and Dale-Olsen (2009) and Hirsch et al. (2010) consider the gender wage gap in the light of this. We relate the migrant effect to the Hirsch and Jahn (2012) analysis of monopsonistic discrimination in Section 2.4.

[3] The term "nationality" rather than "immigrant status" is used here for greater precision given the coding practices of the German Statistical Office. Most German data sources record nationality and not country of birth since German nationality was conferred by descent until the year 2000, when Germany changed its legislation to *ius soli* (this change does not affect our sample).

[4] At the same time, these papers provide complementary perspectives on the native-immigrant wage gap in Germany: descriptive Oaxaca–Blinder decompositions (Velling, 1995; Lehmer and Ludsteck, 2011), wage setting (Brücker and Jahn, 2011), monopsonistic discrimination (Hirsch and Jahn, 2012), while Bartolucci (2013b) provides an interpretation in terms of taste-based discrimination. D'Amuri et al. (2010) pursue a different concern and estimate the wage and employment effects of recent immigration in Western Germany (and find little evidence for adverse effects on native wages and employment levels).

[5] The segmentation assumption has also been imposed routinely in recent search-based structural analyses of the gender wage gap. For instance, Flabbi (2010) considers only whites possessing a college degree, Bowlus (1997) considers two education groups, and Bartolucci (2013a) considers four sectors and two skill groups. Our partition is finer as we also consider three age groups in addition to our three occupation groups (and our estimates remain unbiased should the true partition be such that some segments be aggregated).