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Relations between residential and workplace segregation among newly arrived immigrant men and women

Tiit Tammaru [b,c,*], Magnus Strömgren [a], Maarten van Ham [b,c], Alexander M. Danzer [d]

[a] Department of Geography and Economic History, Umeå University, SE-901 87 Umeå, Sweden
[b] OTB Research for the Built Environment, Faculty of Architecture and the Built Environment, Delft University of Technology, P.O. Box 5043, 2600 GA Delft, The Netherlands
[c] University of St Andrews, UK
[d] Department of Economics, KU Eichstätt-Ingolstadt, Auf der Schanz 49, 85049 Ingolstadt, Germany

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ABSTRACT

Contemporary cities are becoming more and more diverse in population as a result of immigration. Research shows that while residential neighborhoods are becoming ethnically more diverse within cities, residential segregation from natives has overall remained persistently high. High levels of segregation are often seen as negative, preventing the integration of immigrants into their host society and having a negative impact on people's lives. Where as most studies of segregation deal with residential neighborhoods, this paper investigates segregation at workplaces for newly arrived immigrant men and women from the Global South to Sweden. By using the domain approach, we focus on the relationship between workplace segregation, residential segregation, and the ethnic composition of households. Using longitudinal register data from Sweden, we find that residential segregation is much weaker related to workplace segregation than revealed by studies using cross-sectional data. Furthermore, the residential context is not an important factor in explaining workplace segregation for immigrant men. The most important factors shaping workplace segregation pertain to economic sector and city size.

1. Introduction

Research interest in ethnic segregation is increasingly expanding beyond residential neighborhoods (Strömgren et al., 2014; van Kempen & Wissink, 2014). Van Ham and Tammaru (2016) have suggested a domains approach to understanding ethnic segregation which takes into account multiple domains of segregation, including residential neighborhoods and workplaces, and the links between them. In this study we focus on segregation at workplaces since these are key arenas for social interaction and a crucial source of livelihood (Baron & Bielby, 1980; Marcinczak, Tammaru, Strömgren, & Lindgren, 2015; Tomaskovic-Devey et al., 2006), and because many people tend to spend more time interacting with co-workers than with their neighbors. More insight in workplace segregation is important for our understanding of the integration pathways of newly arrived immigrants in their host countries (Kwan, 2013; Marcinczak et al., 2015; Wong & Shaw, 2011). Recent research on segregation has therefore started to take an interest in the workplace context of immigrants, as well as in comparing levels of residential and workplace segregation (Bygren, 2013; Ellis, Wright, & Parks, 2004; Hou, 2009; Strömgren et al., 2014). Less is known on how the two are related to each other, i.e., whether immigrants living in immigrant-dense areas also tend to work in segregated workplaces. Although the literature suggests that levels of workplace segregation are different for men and women (Tzannatos, 1999), not much is known about how the relationship between residential segregation and workplace segregation differs by sex, and how this relationship is mediated through immigrant–native intermarriages.

The aim of this paper is to shed more light on how workplace segregation is related to residential segregation and intermarriage among newly arrived immigrants.[1] It contributes to the segregation literature in three important ways. First, it brings forward the ongoing discussions on segregation as a multidimensional process (Marcinczak et al., 2015; van Ham & Tammaru, 2016) by providing a better understanding of the association between residential and workplace segregation among newly arrived immigrants. We take into account the ethnic composition of the household in studying the role of residential segregation for workplace segregation since for recently arrived immigrants, mixed ethnic unions with natives might lead to different neighborhood and workplace outcomes than for co-ethnic unions (Ellis, Holloway, Wright, & Fowler, 2012; Feng, Boyle, van Ham, & Raab, 2013; Strömgren et al., 2014). Second, we use longitudinal data,

* Corresponding author at: Department of Geography, Faculty of Science and Technology, University of Tartu, Vanemuise 46, Tartu 51014, Estonia.
E-mail address: tiit.tammaru@ut.ee (T. Tammaru).

[1] We focus on immigrants from the Global South: SubS Africa, Asia (with the exception of Japan), Middle East (including North Africa) and South America.

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while most existing studies on segregation use cross-sectional data. The use of longitudinal data allows us to better take into account the fact that sorting of immigrants into workplaces, residential neighborhoods and partnerships is not random; the processes behind settling among co-ethnics and finding a job in an ethnic niche sector could be guided by the very same underlying time-invariant reasons that are difficult to capture with cross-sectional data. Third, we study workplace segregation of newly arrived immigrants separately for men and women. Human capital, institutional and lifestyle-preference (as related to family and work-life expectation) approaches are most often used for explaining general gender differences on the labor market (Hakim 2002). For newly arrived immigrants, the neighborhood of residence might be a factor in shaping labor market outcomes. This topic is, however, little studied, especially from the gender perspective (Andersson et al. 2014; Galster, Andersson, & Musterd, 2010; Strömgren et al., 2014). Andersson et al. (2014) find that immigrant men gain more from living in immigrant-dense neighborhoods in terms of income compared to women. Strömgren et al. (2014) find that immigrant women living in less segregated neighborhoods work also in less segregated workplaces. Thus, the role of neighborhood can have differential effects on labor market outcomes for immigrant men and women. Living together with other immigrants can grant access to better paying jobs immediately upon arrival, but this could be a niche job as much of the information about available jobs circulates through immigrant networks. In the long-run, this could trap immigrants in less paying niches.

The economic role of men and women, and the differences between them, are influenced by three major factors: social institutions and norms, access to resources and networks, and the level of development of a country (Morrisson & Jütting, 2005). All these factors, including the social norms, codes of conduct and informal rules that shape labor market behavior of men and women, differ between countries in the Global South and in the Global North. For newly arrived immigrants, finding a place of residence often precedes getting a job (Hedberg & Tammaru, 2013). Likewise, the importance of informal contacts, including neighbors, is more important for immigrants compared to natives (Klinthäll & Urban, 2016). Hence, we distinguish the correlates of workplace segregation among immigrant men and women as well as by seeking answers to the following research questions: (a) Does settling into residential neighborhoods with a high share of natives help immigrants in getting a job in workplaces with a higher share of natives?; (b) Does this correlation vary between immigrant men and women?; and (c) Is it mediated by living either with a native or with an immigrant partner? Our study is based on unusually rich longitudinal register data from Sweden, a country that has been an important destination for recent immigration from the Global South to Europe.

1.1. Literature review: gender differences in workplace segregation

Workplace segregation is an equilibrium outcome of labor demand and supply, shaped by the geography of places of work and residence. The labor demand side hinges on the number and variety of jobs on offer as well as on the recruitment strategies of firms. The number of jobs available for immigrants is strongly correlated with city size; immigrants arriving in larger cities with a more diverse labor market tend to have better opportunities in finding a job compared to immigrants arriving in smaller places (Hedberg & Tammaru, 2013). Many immigrants arrive to Global North as a result of family formation; 'marriage migration' is more common among women and these women are more likely to settle outside large cities than labor migrants in general (cf. Niedomysl, Östh, & Van Ham, 2010). Likewise, levels of segregation tend to vary by city size. Large cities are often entry ports of immigration and, hence, residentially more segregated; they provide shelter to a larger immigrant population, resulting in homogenous residential areas (Krupka, 2007). Workplaces in larger cities tend to be more segregated, too, for reasons such as a relatively larger size of the migrant communities and more developed ethnic niche jobs (Strömgren et al., 2014).

The supply side crucially depends on formal skills, often measured through the level of education. Education is an important factor shaping workplace segregation (Strömgren et al., 2014). Better educated individuals find jobs more efficiently and effectively, and higher educational attainment leads to a greater range of potential job matches for a worker. Immigrants, especially when moving from Global South to Global North, tend to suffer from skill depreciation and occupational downgrading upon arrival (Arnholtz & Hansen, 2013; Danzer & Dietz, 2014) since employers in the host country tend to discount their education and previous country of origin work experience. Even a mild employer bias can result in substantial discrimination of immigrants in the hiring process (Arrow, 1973; Rydgren, 2004), thus sorting immigrants and natives into different jobs and workplaces. Higher wages in the host country compared to the home country explain the willingness of immigrant workers from Global South to take low status and precarious jobs upon arrival, even when below their skill level (Arnholtz & Hansen, 2013). Although the gender gap in formal education has significantly shrunk in the Global South, women are strongly concentrated in few sectors with low wages and productivity in their home countries (Sinha, 2015). Low female participation and gendered workplaces guided by social norms in their origin countries can induce immigrant women to accept even more precarious jobs than immigrant men in the host countries. Furthermore, there is strong demand for low-skilled jobs in which women tend to be over-represented in the host countries of Global North, for example in services or export-oriented industries (Mahler & Pessar, 2006). This can, on the one hand, elevate female immigrant labor force participation in the Global North, but sort them, on the other hand, into more segregated workplaces, especially in large cities with abundant niche jobs.

Employers competing with each other could, in theory, gain from the diversity of their workers; cultural diversity is often considered a key success factor of firms in the increasingly globally connected world (cf. Alesina & La Ferrara, 2005; Syrett & Sepulveda, 2012). Cultural diversity in the workplaces may facilitate knowledge spillovers and increase knowledge necessary for innovation, and open up new export markets and pave the way to a diversified consumer base in the host country. Less segregated workplaces could thus help firms to better adapt to the challenges of the local and global economy (Kourtit, Nijkamp, Franklin, & Rodríguez-Pose, 2014), and any preference for natives in the hiring process could work against the competitive edge of companies (Becker, 1957). Legislative developments increasingly aim to diminish discrimination and inequality in the labor market (MacKay et al., 2015). At the same time, employers may be reluctant to hire new immigrants whose background characteristics (ability, skills, and other work-related characteristics) are more difficult to judge formally (Fernández & Ortega, 2008). The resulting implicit discriminatory practices of employers tend to be gendered since men and women work in different sectors with peculiar hiring practices (Creese & Wiebe, 2009); such practices can also persist over extended periods of time (Reskin et al., 1999).

Aligning demand and supply hinge on the geography of places of work and residence. This has been one of the core interests in urban geography for decades (Alonso, 1964; Ellis et al., 2004; Hanson & Pratt, 1988; Strömgren et al., 2014; van Ham, Hooimeijer, & Mulder, 2001). According to the spatial mismatch hypothesis (Kain, 1992), changes in the geography of workplaces affect minority groups negatively as they get separated from employment opportunities. This also applies to new arrivals as jobs suitable for them are more dispersed in the city than their places of residence (Åslund, et al. 2010). In Sweden, living in deprived neighborhoods is strongly related to difficulties on the labor market (Schierup & Ålund, 2011). Migrants have to find a home from the very first day of arrival, and they are constrained to housing that is available and affordable for them, hence, often forcing them to settle in deprived areas (Marcinczak et al., 2015). The first residence

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after arrival is therefore often located in immigrant-dense areas that disconnect migrants both from potential job opportunities (spatial accessibility to jobs) as well as information flows (social accessibility to jobs). Contrary to the spatial mismatch hypothesis, however, immigrants with low purchasing power on the housing market and low-wage employers might both locate in low-rent districts bringing labor supply and demand closer to each other in the city (Parks, 2004).

The role of residential segregation in workplace segregation can be gendered because of three mechanisms: gendered social norms in the labor market, different levels of residential segregation between immigrant men and women, and intermarriages with natives that relate both to the residential segregation and transmission of social norms. According to Andersson, et al. (2014, p. 715): "socialization and social control forces emanating from the immigrant-dense neighborhoods may generate gendered effects both on permissible behaviors and the spaces in which permissible activities may be conducted". As an example of permissive behavior, they refer to the more traditional and patriarchal social norms towards female working life among immigrants from Global South. The socialization argument thus makes us to expect that settling in immigrant-dense neighborhoods contributes to the maintaining of gendered labor market norms. This is so not only because the social networks of immigrant women are more residential neighborhood-based compared to immigrant men; the social networks of immigrant women tend also to be smaller (Moore, 1990; Wang, 2010); this further increases the importance of neighborhood-based socialization of immigrant women. Furthermore, the job search area of immigrant women tends to be smaller because they are usually more engaged in household-related responsibilities than immigrant men (Hanson & Pratt, 1992). Results from the United States reveal that immigrant women indeed tend to work closer to home, and living in immigrant-dense neighborhoods relates to working in niched workplaces more often for women than for men (Ellis, et al. 2007; Hanson & Pratt, 1992; Parks, 2004).

The socialization argument further suggests that moves into neighborhoods with a high share of natives could be more beneficial in terms of workplace integration for immigrant women compared to immigrant men. In such neighborhoods, less traditional and patriarchal social norms prevail; since immigrant women tend to depend more on neighborhood based social networks compared to immigrant men, they could gain more from living in neighborhoods with a higher share of natives as well (Andersson et al. 2014). Marcinczak et al. (2015) recently showed that immigrants from the Global South are the most segregated migrant group in Sweden; yet, on top of this immigrant men from the Global South are residentially more segregated than immigrant women from the Global South. Strömgren et al. (2014) further argue that the family context of migrants should be considered in the transmission of social norms and in understanding the gendered link between residential and workplace segregation since partners share the neighborhood of residence. Living together with a native partner could help to accumulate country-specific tacit knowledge and learn about the social norms, also when it comes to the labor market (Alba & Nee, 2003; Dribe & Lundh, 2008). Like neighborhood effects, intermarriage patterns with natives are highly gendered among immigrants. For example, Niedomysl et al. (2010) demonstrate that immigrant women are more often intermarried with natives than immigrant men. Hence, there is a need to disentangle the role of living in neighborhoods with high share of natives and the role of living with a native partner for a better understanding of the workplace integration of immigrant men and women.

1.2. Data and methods

We use data from the longitudinal Swedish Population Register, which includes the whole Swedish population, and which provides researchers the opportunity to follow individuals over time. Our research data includes all immigrants who entered Sweden from the Global South in 1990, 1995 and 2000. Following three distinct immigration cohorts allows us to account for the fact that immigration to Sweden grew rapidly in the 1990s. Also, given that migration is often a network based phenomenon (Alba & Nee, 2003), those immigrants who arrived in 2000 had a much higher probability to rely on co-ethnics in finding their first residence and their first job compared to those who arrived in 1990. The Swedish Population Register does not include information on race or ethnicity and, therefore, we capture the diversity of immigrants in Sweden by focusing on the country of origin, a common strategy in countries with register data (e.g., Damm, 2014). We defined immigrants from Global South to originate from the Middle East (including North Africa), Sub-Saharan Africa, Asia, and South America. We construct a panel dataset and follow each immigrant cohort, year-by-year, up to five years after the year of arrival; i.e. we follow immigrants who arrived in 1990 from 1991 to 1995, immigrants who arrived in 1995 from 1996 to 2000, and immigrants who arrived in 2000 from 2001 to 2005. Overall, our research population includes 13,279 individuals with 43,993 observations. We model the workplace segregation of immigrants by applying, first, Ordinary Least Squares regression on our panel dataset in order to shed light on structural workplace segregation:

$$Y_i = \beta_0 + \beta_1 NeighExposure_i + \beta_2 NativePartner_i + X + \varepsilon_i \quad (1)$$

We model workplace segregation separately for immigrant men and women. For immigrant *i*, the dependent variable *Y* measures the share of native co-workers at his/her workplace establishment. Establishments are defined by exact postal address. In order to study the relationship between residential and workplace segregation, the explanatory variable of main interest is the share of native Swedes in individual *i*'s neighborhood of residence (*NeighExposure*, ranging between zero and one). Following previous studies for Sweden (Tammaru, Strömgren, Stjernström, & Lindgren, 2010; Åslund & Nordström-Skans, 2010), we define residential neighborhoods as SAMS areas; the smallest spatial statistical units in Sweden, with an average population of about 1000 inhabitants. We cluster standard errors in all our regressions at the SAMS level to take into account that neighborhood exposure is an aggregated variable.

Since partners share their neighborhood of residence, we add a dummy indicating having a native partner (*NativePartner*) into our regression model.[2] We further control for other relevant individual characteristics in our regression model (denoted with *X* in the equation) by including immigrant region of origin, year of immigration, gender, education, age at arrival in Sweden, years since arrival, citizenship, neighborhood population size, number of co-workers, Swedish macro regions, Swedish citizenship and industry/line of business (see Table 1 for descriptive statistics).

Estimating model (1) does not take into account the fact that the selection of immigrants into residential neighborhoods and workplaces is influenced by the same underlying time-invariant individual characteristics that we cannot directly measure. For example, an individual's ability or difficulty to integrate in the host society can simultaneously play a role for settling in neighborhoods with high share of co-ethnics and for finding a job in an ethnic workplace. Such unmeasured characteristics are absorbed in the error term ε in Eq. (1). To overcome the problem that some unmeasured time-invariant individual characteristics jointly influence workplace and residential segregation, we also estimate a fixed effects regression model for the change in workplace segregation:

$$Y_{it} = \beta_0 + \beta_1 NeighExposure_{it} + \beta_2 NativePartner_{it} + X + \alpha_i + \varepsilon_{it}, \quad (2)$$

[2] We are, of course, aware of the endogenity of inter-ethnic intermarriage. Due to the absence of a convincing instrument, we do not claim any causal effect of intermarriage on workplace segregation. The part of the endogeneity bias which stems from time-invariant unobservable factors, however, will be eliminated in the fixed effects estimation.

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Table 1
Characteristics of the research population.

			Total	Males	Females
Workplace exposure	(Continuous; %)	Mean	65	64	67
Neighbourhood exposure	(Continuous; %)	Mean	75	73	77
Partnership status	No partner [ref]		43	47	37
	Native partner		16	12	22
	Foreign-born partner		41	41	41
Neighbourhood population size	(Continuous; no. of inhabitants)	Mean	4 057	4 225	3 836
Workplace population size	(Continuous; no. of employees)	Median	94	91	98
Macro region	Stockholm [ref]		50	51	48
	Gothenburg		12	12	14
	Malmö		8	7	8
	Large regional centres		23	23	22
	Rest of Sweden		7	7	8
Age	(Continuous; years)	Mean	29	29	29
Education	Compulsory [ref]		35	35	36
	Secondary		29	29	28
	University		36	36	36
Year of arrival	1990 [ref]		42	45	38
	1995		22	20	24
	2000		36	35	38
Region of origin	Middle East [ref]		33	40	23
	Asia		33	25	43
	Africa		16	18	15
	South America		18	17	19
Swedish citizen	Yes		7	7	8
	No [ref]		93	93	92
Industry	Manufacturing [ref]		20	24	14
	Wholesale and retail		6	7	5
	Hotels and restaurants		17	18	17
	Transport and communication		5	6	3
	Fin. and business services (low-skilled)		14	13	15
	Fin. and business services (high-skilled)		5	6	5
	Public administration		2	2	2
	Education		9	8	11
	Health, social and other services		21	15	27
	Undefined		1	1	1

This fixed effects model thus focuses on the association between the change of workplace segregation and the change of residential segregation. Those unmeasured individual characteristics that do not change over time (such as ability and willingness to integrate) are now captured by the individual fixed effect α_i, and no longer bias our estimates of residential segregation on workplace segregation. Again, we run separate models for immigrant men and women.[3] This study is about segregation. For the sake of diversifying language in the empirical section, we use also the term workplace integration when referring to (a) lower levels of workplace segregation of one group compared to another group, or (b) a decrease of workplace segregation of immigrants from natives over time.

1.3. Empirical findings: gender differences in workplace segregation

1.3.1. General changes in workplace segregation, residential segregation and intermarriage

For newly arrived immigrants only 3 out of 4 of their neighbors and about 2 out of 3 of their co-workers are native Swedes (Table 2). This suggests that immigrants are more likely to work in segregated workplaces than to live in immigrant-dense residential neighborhoods—in line with previous research in Sweden (Marcinczak et al., 2015). The differences in workplace segregation at arrival are small between regions of origin and gender: they are lowest among women arriving from Asia and highest among women arriving from Africa. Most immigrant men and women from the various origin groups have intermarriage rates between 10% and 20%. Among migrants from Middle East and Africa intermarriages with natives are more common among men compared to women upon arrival to Sweden. Among women, intermarriages are especially common for migrants arriving from Asia (32% have a native partner upon arrival), and very uncommon for migrants arriving from Middle East (5% have a native partner upon arrival). Although not directly obvious, these findings are important when thinking about the meaning of ethnic segregation in residential neighborhoods. Even though segregation levels could be the same, a neighborhood with a high percentage of immigrant-native unions is different from a neighborhood with a high percentage of immigrant-immigrant unions in terms of the socialization process of recently arrived migrants.

Changes in workplace and residential segregation of Global South immigrants during the first five years after arrival in Sweden reveal some differences with respect to region of origin. As time passes, workplace integration with natives increases for both men and women from all regions, except for males from Africa. Interestingly, immigrant women from Asia who are most strongly involved in family migration, integrate into the labor market at lower pace than female immigrants from other regions. This suggests that intermarriage with a native is not necessarily beneficial for immigrant labor market integration. Residential segregation shows an opposite trend to workplace segregation: with time, residential segregation increases for both men and women from all origins. The main reason for this is the continuous in-flow of new immigrants, who predominantly settle in already immigrant-dense neighborhoods (Marcinczak et al., 2015). This implies a convergence of segregation in those two important domains of daily life. Still, five years after immigration the fraction of Global South immigrants living with native neighbors remains higher than the fraction of those working together with native co-workers. Intermarriage rates change significantly during the first five years after immigration, with opposite trends for men and women. While the share of Global South immigrant men having a native Swedish partner decreases the proportion of intermarriages among women from Asia and South America increases. This is an interesting finding in itself that need future research.

1.3.2. The gendered role of residential segregation in workplace segregation

We continue by investigating structural segregation by focusing on the role of residential segregation in workplace segregation, with the

Table 2
Share of natives at places of work and residence of immigrant, and share of immigrants intermarried with natives at arrival and 5 years since arrival.

	Males		Females	
	Year 1	Year 5	Year 1	Year 5
	Mean	Mean	Mean	Mean
Workplace exposure				
Middle East	64	66	66	70
Asia	59	64	64	66
Africa	66	65	63	66
South America	64	67	67	72
Neighborhood exposure				
Middle East	75	71	75	72
Asia	74	72	80	79
Africa	75	68	73	70
South America	79	75	79	78
Native partner				
Middle East	13	7	5	3
Asia	18	12	32	38
Africa	19	10	13	12
South America	15	14	20	23

[3] The models not split by gender are available upon request.

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Table 3
Ordinary Least Squares (OLS) and fixed effects (FE) regression estimates of share of natives among co-workers for male and female migrants from Global South.

		Males				Females			
		OLS Model 1a		FE Model 2a		OLS Model 1b		FE Model 2b	
Neighbourhood exposure	(Continuous; %)	0.416***	0.175***	0.055***	0.019	0.411***	0.165***	0.080***	0.048**
		(0.023)	(0.016)	(0.015)	(0.014)	(0.024)	(0.017)	(0.022)	(0.021)
Partnership status (Ref.: No partner)	Native partner	1.235	3.797***	1.855**	1.509**	1.278**	3.909***	0.153	0.300
		(0.766)	(0.569)	(0.819)	(0.711)	(0.638)	(0.529)	(0.723)	(0.659)
	Foreign-born partner	−0.092	−1.565***	−0.316	0.241	−0.270	−2.577***	−1.163	−0.620
		(0.519)	(0.421)	(0.485)	(0.428)	(0.562)	(0.453)	(0.724)	(0.623)
Year since arrival (Ref.: Year 1)	Year 2	1.249***	1.122***	0.746***	0.810***	1.091**	1.103***	0.766**	0.939***
		(0.406)	(0.338)	(0.282)	(0.254)	(0.444)	(0.349)	(0.304)	(0.269)
	Year 3	1.363***	1.198***	1.058***	0.963***	2.194***	1.315***	1.336***	1.161***
		(0.493)	(0.392)	(0.343)	(0.308)	(0.518)	(0.409)	(0.377)	(0.339)
	Year 4	2.972***	1.485***	1.184***	1.105***	3.026***	1.332***	1.385***	1.169***
		(0.508)	(0.427)	(0.330)	(0.306)	(0.556)	(0.455)	(0.414)	(0.372)
	Year 5	3.912***	1.670***	1.047***	0.694**	3.953***	1.023**	1.590***	0.737*
		(0.517)	(0.445)	(0.360)	(0.348)	(0.568)	(0.477)	(0.443)	(0.431)
Neighbourhood population size	(Continuous; no. of inhabitants)		6.9×10^{-5}		-5.8×10^{-5}		$-1.98 \times 10^{-4***}$		1.6×10^{-5}
			(6.4×10^{-5})		(5.6×10^{-5})		(6.8×10^{-5})		(8.4×10^{-5})
Workplace population size	(Continuous; no. of employees; logged)		4.491***		3.700***		3.901***		3.051***
			(0.121)		(0.176)		(0.124)		(0.204)
Macro region (Ref.: Stockholm)	Gothenburg		6.732***		3.233**		9.149***		4.797**
			(0.752)		(1.506)		(0.702)		(2.095)
	Malmö		7.363***		1.701		9.366***		0.983
			(0.835)		(1.753)		(0.853)		(3.395)
	Large regional centres		10.719***		4.905***		13.958***		6.593***
			(0.656)		(1.065)		(0.646)		(1.614)
	Rest of Sweden		13.434***		7.067***		19.118***		10.251***
			(1.014)		(1.512)		(0.803)		(1.987)
Age at arrival	(continuous; years)		−0.009				−0.021		
			(0.032)				(0.031)		
Education (Ref.: Compulsory)	Secondary		3.115***				1.521***		
			(0.464)				(0.526)		
	University		4.024***				1.890***		
			(0.496)				(0.545)		
Year of arrival (Ref.: 1990)	1995		−2.875***				−4.008***		
			(0.522)				(0.549)		
	2000		−6.209***				−6.505***		
			(0.491)				(0.506)		
Region of origin (Ref.: Middle East)	Asia		−3.044***				−2.541***		
			(0.598)				(0.573)		
	Africa		1.053*				−0.239		
			(0.541)				(0.592)		
	South America		3.172***				0.704		
			(0.486)				(0.604)		
Swedish citizen (Ref.: No)	Yes		−0.751		−0.767		1.429**		0.339
			(0.679)		(0.513)		(0.586)		(0.537)
Industry (Ref.: Manufacturing)	Wholesale and retail		3.680***		3.009**		7.791***		2.953*
			(0.998)		(1.430)		(1.282)		(1.775)
	Hotels and restaurants		−10.341***		−4.573***		−7.032***		−0.542
			(0.777)		(1.140)		(0.779)		(1.399)
	Transport and communication		−0.432		−0.667		4.604***		7.128***
			(0.788)		(1.195)		(1.516)		(2.081)
	Financial and business services (low-skilled)		−24.469***		−22.266***		−20.273***		−16.769***
			(0.801)		(1.196)		(0.924)		(1.431)
	Financial and business services (high-skilled)		3.696***		−1.040		6.996***		4.853***
			(1.085)		(1.235)		(1.164)		(1.634)
	Public administration		−0.622		−4.430**		1.947		5.199***
			(1.153)		(1.829)		(1.596)		(2.003)
	Education		7.496***		6.276***		10.359***		11.417***
			(0.642)		(1.265)		(0.724)		(1.417)
	Health, social and other services		1.756***		1.746		4.234***		5.855***
			(0.671)		(1.142)		(0.603)		(1.185)
	Undefined		−6.781***		−5.027**		−6.133***		−3.213
			(1.961)		(2.198)		(1.976)		(2.514)
	Constant	31.596***	29.689***	59.002***	45.681***	32.834***	33.991***	59.816***	43.976***

(continued on next page)

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Table 3 (*continued*)

	Males				Females			
	OLS Model 1a		FE Model 2a		OLS Model 1b		FE Model 2b	
	(1.982)	(1.946)	(1.134)	(1.748)	(2.141)	(2.112)	(1.733)	(2.356)
Observations	25,008	25,008	25,008	25,008	18,985	18,985	18,985	18,985
R-squared	0.076	0.409	0.003	0.201	0.083	0.426	0.004	0.204
Number of pid			7474	7474			5805	5805

Robust standard errors in parentheses.
*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

dependent variable being the share of natives in the workplace establishment where Global South immigrants work. Ordinary Least Squares regression models for all immigrants from Global South confirm (cf. Table 2) that women work in less segregated workplaces than men (results not shown but available upon request). We proceed with the analysis of models split by gender. Our most important finding is that living in a neighborhood with a higher share of natives is associated with a higher share of natives in immigrants' workplaces and the results are very similar for men and women (Table 3, model 1a and 1b). This is an important finding since we do take into account the fact that some immigrants, especially immigrant women, are intermarried with natives, while others are not. Having a native partner itself is positively related to a higher share of natives in the workplace as well. The results also confirm (cf. Table 2) that the share of natives in workplace establishments where immigrants from Global South work increases with years since arrival.

The association between residential segregation and workplace segregation weakens but remains statistically significant once we include all the other important control variables into our regression models 1a and 1b (Table 3). This shows that the largest part of the association between residential and workplace segregation is actually reflected in variation in other individual characteristics such as education and economic sector where immigrants work, or by the nature of the local labor markets captured by the variable Swedish macro region. Likewise, the pace of workplace integration becomes smaller once we take into account all the relevant control variables. Again, models split by gender yield very similar results; both men and women living with a native partner work in more integrated workplaces, while both men and women who live with an immigrant partner work in the most segregated workplaces. The workplace integration of immigrants is higher in larger companies and it increases as we move down the urban hierarchy. Compared to those in the Stockholm metropolitan area, immigrants working in small towns and rural areas are most integrated at workplaces, i.e. the size of the local immigrant population seems to be related to availability of ethnic niches in the labor market (cf. Hedberg & Tammaru, 2013; Parks, 2004). The year of arrival indicates that each subsequent immigrant cohort works in more segregated workplaces compared to earlier arrivals. This confirms previous findings which stress the importance of ongoing immigration for increased segregation levels, both at places of residence and work (Marcinczak et al., in press). Nevertheless, residential segregation still explains part of the workplace segregation within cities, industries, immigrant cohorts and educational groups.

Parks (2004) and Wright, Ellis, and Parks (2010) demonstrate that ethnic labor market niching is highly gendered in the USA. Our analysis with Swedish data does not show such marked gender differences in workplace segregation across sectors: both immigrant men and women who are employed in low-skilled finance and business services as well as in hotels and restaurants work in the most segregated workplaces. Workplace integration is highest among men and women employed in education. However, immigrant men tend to gain more than women from a university degree. Women gain from Swedish citizenship while we do not detect such an effect for men. The results further show that, origin-wise, men arriving from South America are best integrated into the Swedish labor market. Both men and women from Asia are most segregated at the workplace.

Next we use fixed effects regression models to uncover the relationship between changes in the share of native neighbors and native coworkers for Global South immigrants during the first five years in Sweden. By doing this, we are able to control for time-invariant unobserved individual characteristics, such as ability or willingness to integrate, that can be important both for settling among co-ethnics and niche workplaces. These models also shift the attention towards dynamics in residential segregation and workplace segregation. Some important new findings emerge from this analysis (Table 3, models 2a and 2b). Most remarkably, the results between independent and dependent variables vary a lot more by gender compared to models 1a and 1b. For women, an increase in the share of immigrants in residential neighborhoods increases workplace segregation, while no comparable effect can be found for men. Getting a native partner does not correlate with higher levels of workplace integration for women. For men, the results are exactly the opposite: While intermarriage matters, the residential context does not. This implies that the role of neighborhood context and the role of living with a native partner on workplace integration are highly gendered among immigrants from the Global South to Sweden; women gain in terms of workplace integration from living in neighborhoods with high share of natives while men gain from having a native partner.

Line of business (economic sector) and city size are quantitatively the most important factors related to workplace segregation for both men and women. The relationship between moves between lines of business and workplace segregation are gender-specific. Workplace segregation increases for men but not women when getting a job in hotels and restaurants. Workplace integration increases for women but not for men when getting a job in transport and communications, the high-skilled financial sector as well as public administration. In other words, while workplace segregation of men and women generally does not differ by economic sector, mobility between the sectors will lead to important gender differences in workplace segregation. While labor market mobility has gendered effects on workplace segregation, no effects arise from spatial mobility across labor market areas. Moving down the urban hierarchy, especially to areas outside larger cities, is associated with higher levels of workplace integration for both sexes.

1.4. Summary and discussion

Most previous studies on workplace segregation of immigrants take an interest in structural segregation, paying less attention to the dynamics of the segregation processes. We focused on the dynamic part by investigating the role of changes in residential segregation on changes in workplace segregation. We also took into account the effect of

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intermarriage on workplace segregation, and we investigated the gender dimension of workplace segregation. We applied a longitudinal research design by following 1990, 1995 and 2000 arrival cohorts of Global South immigrants during their first five years in Sweden. We generally find that men and women become more residentially segregated during that period. These results diverge from previous findings based on cross-sectional data[4] (e.g. Ellis et al., 2004; Marcinczak et al., 2015) in that the link between residential segregation and workplace segregation seems much weaker and even non-existent for immigrant men arriving from Global South. For men, residential segregation does certainly not bring along workplace isolation (cf. Edling & Rydgren, 2012). For both sexes, the most important variables related to workplace segregation during the first years upon arrival relate to economic sector and city size.

We find increasing levels of residential segregation among all immigrant groups arriving from Global South over time. This can be due to several mechanisms. As a sizeable part of new immigrants settle in already immigrant-dense neighborhoods, levels of residential segregation increase also for already established immigrants. Andersson and Kährik (2015) demonstrate that declining housing benefits are responsible for growing levels of residential segregation since the socio-economic position of immigrants tends to be weaker than that of natives, leading to spatial concentration in residualized public housing stock. As immigrant-dense neighborhoods start to emerge, natives begin to leave or avoid such areas (Andersson & Bråmå, 2004; Bråmå, 2006), further contributing to the increase in residential segregation. Workplace segregation of Global South immigrants is higher than residential segregation at arrival, for both men and women. This is most likely caused by a combination of finding jobs through migrant networks and facing difficulties in matching their skills—which were obtained in a very different context—to jobs in the Swedish labor market. Within the first five years in Sweden, workplace segregation of immigrants exceeds residential segregation but, unlike residential segregation, it tends to fall with time. Swedish integration policies favor workplace integration. For instance, the content of language courses in Sweden is largely employment related, helping migrants to become fluent in work-specific terminology (Wiesbrock, 2011) and, thus, making it easier in getting the first job.

Changes in intermarriage rates with natives produce yet another picture. Living with a native partner becomes less common over time among immigrant men, especially when arriving from Africa and Asia. The opposite is true for women with the exception of African-origin women who do not exhibit major changes in intermarriages with natives during the first five years in Sweden. The results of the ordinary least square regression models show that living in neighborhoods with a high share of natives is associated with a higher share of natives in the workplace establishment where immigrants work. This confirms the results obtained from cross-sectional analysis both in the USA (Ellis et al., 2004) and Sweden (Marcińczak, et al. 2015) that residential and workplace segregation are correlated with each other. Immigrants who live in residential neighborhoods with a higher share of natives tend to work in more integrated workplaces, and vice versa. Also, living with a native partner is related to higher levels of workplace integration. The models split by gender yield, interestingly, very similar results. The findings from the longitudinal analysis of change in workplace segregation by means of fixed effects regression models reveal major gender differences. While women do gain from an increasing share of native neighbors in terms of workplace integration, this is not the case for men for whom getting married with a native partner is more important in facilitating workplace integration. Intriguingly, immigrant men from the Global South do not gain in terms of workplace integration from living in better integrated neighborhoods. This finding is in line with what has been found in qualitative studies in the USA, which show that residential neighborhoods are more important for job related networks of women than of men (Hanson & Pratt, 1991).

To conclude, changes in residential segregation and intermarriages with natives are differently related to workplace segregation for immigrant men and women arriving in Sweden from the Global South. For women, there is a positive relationship between increases in the share of natives in residential neighborhoods and at places of work. Thus the residential context matters for women, probably both directly through information about job opportunities as well as indirectly by helping to learn the comparably gender neutral social norms in Sweden. We also observe that immigrant women from the Global South increase their intermarriage rates over time. Although getting intermarried does not have a direct effect on their workplace integration, it contributes to their residential integration which in turn is positively related to workplace integration for women. For men we do find gains from getting a native partner in terms of workplace integration, but not between residential and workplace segregation. Overall, these results confirm that it is important to go beyond residential segregation and conceptualize segregation across multiple interlinked domains (Marcinczak et al., 2015; Strömgren et al., 2014; van Kempen & Wissink, 2014). Such a domain approach to understanding ethnic segregation as suggested by van Ham and Tammaru (2016) allows us to better understand the integration pathways of immigrants in todays' increasingly ethnically diverse cities. Our study sheds light on important gender differences in the integration pathways, with women gaining more from residential context and men from intermarriages with natives.

[4] This study defines also more precisely as establishments not as neighborhoods where workplaces are located.

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