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Labour Market Outcomes of Spatially Mobile Coupled Women: Why is the locational context important?*

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Abstract

Previous research on the labour market outcomes of spatially mobile couples has shown that mobility has serious detrimental effects on the employment situation of women. This has been largely attributed to their prevalence as secondary earners playing a minor role in job-related mobility decisions of the household. Yet the impact of regional opportunity structures in determining labour market outcomes of mobile coupled females has been neglected, although recent studies suggest the significance of this aspect. Using the SOEP 1992 – 2006 the following analysis investigates the consequences of mobility for women taking into account the economic structure of the destination region.

JEL Classifications: D1, J16, J61, R23

1. Introduction

The geographic dimension of labour markets has received renewed attention in explaining women's labour market success and the gender wage gap. It has been argued that regional disparities in income and employment opportunities may affect work biographies and careers of women differently depending on where they live (Bender / Hirschenauer, 1993). In particular there is evidence that the wage differentials between male and female workers are substantially smaller in metropolitan areas (Ofek / Merrill, 1997; for Germany see: Busch / Holst, 2008), where the employment, income and qualification situation of

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The data set was extracted using the Add-On Package PanelWhiz for Stata®. PanelWhiz (http: // www.PanelWhiz.eu) was written by Dr. John P. Haisken-DeNew. See Haisken-DeNew / Hahn (2006) for details. The PanelWhiz generated Do file to retrieve the Data used here is available from me upon request. Any data or computational errors in this paper are my own.

women is above-average compared to other regions (Bender / Hirschenauer, 1993). Several explanations have been offered for these empirical findings. First, urban economies in general are characterized by large and diverse labour markets offering better job opportunities, higher income levels and steeper wage growth for a variety of groups, including women (Glaeser / Maré, 2001; Blien / Stüber et al., 2007; Wheeler, 2001)[1]. Second, at the same time these areas concentrate high-ability workers, who are attracted to the amenities and returns to human capital found to be highest in large cities (Compton / Pollak, 2004; Wheeler, 2001; Möller / Haas, 2003)[2] – among them also a high portion of women seeking better career and employment prospects in urban regions (Edlund, 2000). This latter point adds a dynamic aspect to the question and is particularly relevant from the perspective of geographical mobility research.

While an extensive body of literature gives general evidence on the positive outcomes of regional mobility for the economic success of men and single women irrespective of the destination of the move, most studies have also concluded that for married and partnered women residential relocation imposes severe disadvantages regarding work participation, hours worked and income (for a review see e.g.: Jacobsen / Levin, 1997; Taylor, 2006). Accounting for these effects authors point to the "co-location" problem that arises for most couples as regional preferences and job opportunities are likely to differ for the partners (Compton / Pollak, 2004). Due to the generally weaker labour market position of women locational decisions are more often undertaken for the career advancement of the male partner. Being mostly secondary earners women's employment and income chances are subordinated in the mobility considerations of the household (Ofek / Merrill, 1997). Yet the impact of the destination itself on the outcome of a move has been mostly disregarded, although there is substantial evidence that regional factors might be very influential in determining the labour market outcomes of mobile couples – especially those of women.

Hence, the aim of this article is to address the regional dimension of labour market outcomes of spatially mobile coupled women. Although the following considerations clearly have relevance for the returns to mobility for coupled men, too, we will focus solely on the economic consequences of mobility for their female partners. The remainder of the article will first provide some theoretical background for linking household migration decisions, individual labour market outcomes and regional economic structures. Hypotheses are

[1] Regional economists view higher wages in big cities – the so called urban wage premium – as a result of various types of agglomeration externalities (due to labour pooling, reduced transportation costs, technological and informational spillovers, better employer-employee matches), which enhance the productivity of firms and workers in cities (Wheeler, 2001; Ciccone / Hall, 1996).

[2] Empirical evidence on concentration of high-skilled workers in metropolitan areas can be found in Glaeser / Mare (2001) and Wheeler (2001).

derived from these considerations and tested empirically using the SOEP 1992 – 2006. The results of the empirical investigation are then discussed in the light of earlier findings. The article concludes with some general remarks and issues for future research.

2. Migration and the Household Context

Early theoretical work on migration in the household context can be traced back to Jacob Mincer (1978). Drawing from human capital theory which assumes that people move in order to maximize their individual life income (Sjaastad, 1962), Mincer argues that households migrate in order to improve the collective household situation. Accordingly, a household move can be expected when the net family gain is positive, that is when the sum of the individual gains of the household members exceed the aggregated costs. On the individual level, of course, one partner can have disadvantages from moving if the benefits of the other partner outweigh his losses.[3] "No move will occur unless each earner gains separately, or one gains more than the other loses" (Ofek / Merrill, 1997). In Mincer's terminology those individuals who are dominated by the collective decision are called "tied movers".

This model has several implications for the question discussed here. In the first place couples should have a lower moving disposition than partnerless individuals, because family members impose mobility restrictions on each other. Mincer's crucial argument behind this consideration is derived from probabilistic calculus stating that the chance is relatively small that all household members will equally benefit from moving to the same geographic location. For a dual earner couple for instance, it is quite improbable that both partners will have their best job offers at the same destination. Thus the likeliness that a positive net gain from migration even arises is considerably higher for singles than for couples or family households. For a household move still to occur one partner's gains must outbalance potential wage drops of the other. Because their relative contribution to the household income is generally lower, women's possible losses in earnings can be outweighed more easily by their male partners' income gains. Female partners will therefore on average be more often in the situation of the tied mover making concessions at expense of their career. Both implications of the Mincer model are widely supported by empirical findings indicating that couples are less willing to move than singles and that among mobile couples women bear economic losses (see e.g. Taylor, 2006; Mincer, 1978; Jürges, 2005, 1998; Bartel, 1979; Jacobsen / Levin, 1997).

[3] The theory assumes that the disadvantaged partner will be compensated for his losses through side payments and internal redistributions of the household gain.

3. Regional Opportunity Structure and the Co-location Conflict

However the impact of the regional opportunity structure calls for additional consideration, when analyzing the economic consequences of mobility. As urban size reflects labour market size and thereby determines the availability of job opportunities, moving to metropolitan areas might significantly improve the employment prospects and job matches of partnered women. This might lead to very different consequences of regional mobility for women than those identified in the literature so far. Household migration directed to large cities solves the locational problems of couples by offering better career and income prospects for *both* partners and thereby increasing the chance that also coupled females can take advantage from a move. This should be especially the case among highly educated women, whose job profiles are more specialized and whose forgone income induced by mobility might be considerable.[4] Moving to the large and diverse labour markets of big cities should especially enable couples with high-skilled females to reach a positive net gain by improving the chances of pareto-optimal outcomes on household level.

Following the above argumentation several testable hypotheses can be derived:

1. Compared to low-skilled coupled women, highly educated coupled women should in general have more positive or at least less negative outcomes after a move. Because of their higher earnings potential, their economic outcomes weigh more in the mobility decision of the household. Thus the threshold of a move to be favourable on the household level increases. As a consequence mobility decisions become highly selective: for couples with highly educated women a positive net gain on household level can only be achieved if both partners profit from moving. This should become evident in positive absolute income gains for educated females following a move.
2. On the other hand moving to metropolitan areas should in general affect women's labour market outcomes positively. There are not only more job offers and better paying industries in urbanized areas, also the higher availability of employment-relevant services like child care facilitate women's labour market participation by decreasing their reservation wages (Phimister, 2004).

[4] Descriptive results based on the data sample used in the following empirical investigations (SOEP 1992 – 2006; for details see chapter 3) lend strong support to this assumption: partnered women with completed higher secondary education ("Abitur") have a mean gross monthly income of 2300 Euro, which is about 40% more than that of lower educated women with average 1300 Euro. When non-employed women are included in the sample with zero income, high-skilled women even earn 50% more, which reflects their higher work participation.

3. Moreover, the positive effects of moving to big cities are expected to be largest for highly educated women. The opportunity structure of metropolitan economies allows such couples both to overcome the higher threshold of achieving a positive household gain, and for females to take advantage of the favourable urban labour markets, which are assumed to be particularly beneficial for skilled workers.

4. Data and Methods

To empirically address the questions outlined in the previous chapter pooled panel data over the waves 1992 – 2006 of the German Socioeconomic Panel Study (SOEP) (Wagner / Frick et al., 2007) was used. For the aims of this study the original data set was restricted to women only, who live with a partner in a common household – married or unmarried, with or without children. Moreover only females who are potentially in the labour force were included limiting the age range of the respondents to 18 – 60 years. In order to avoid confounding of the results – because couples might split up and establish new partnerships after migration or even separate due to differential migration incentives – it was made sure that women remained in the same partnerships during the observational window[5].

As the primary interest of this study is job-related mobility decisions of households, the variable *move* indicates if a couple relocated for job reasons. In this case after-move periods are assigned the value 1, whereas before-move periods get the value 0; in the panel fixed effects estimation method used here (see next paragraph) this simulates an experimental setting with before – after measurement. *Educational attainment* is measured in years of schooling; for better interpretation of the results this variable was centred at 9 nine years of school-education, which reflects the lowest formal educational degree available in Germany. Cities with a population exceeding 500,000 inhabitants were defined as *Metropolitan Areas.* As general indicator of the labour market success the deflated (base year 2001) *monthly gross labour income* in Euro was used.[6] In order to make observable all kinds of movements in and out of the labour market, before and after a move, and thereby allowing income gains and losses to become relevant in the estimation – women who were not in the

[5] This selection is important as the theoretical model explicitly addresses the impact of *family ties* and *household decision making* on the individual outcomes after a move. However, female movers who separated from their current partners are actually *not* restricted by collective rationality or rather act under different conditions regarding their labour market decisions. Including them into the sample of coupled women would therefore cause bias.

[6] Alternative operationalization using annual income yields no different results, but as annual income is only available for the previous year I avoided loss of information for one period by using current monthly income.

labour force during a period of time were not dropped off the analysis, but included with zero income. The effects of a household move thus reflect the real income movements of the female respondents during the observational window.[7] The resulting data set contains 10352 women in partnerships (72735 person-years), of which 5% ($N = 495$) conducted at least one household move during the survey period. Table 1 gives an additional overview over socio-economic characteristics of the sample, where the selectivity of the mover-group becomes nicely evident.

Estimation of the multivariate models is based on panel fixed effects methods (FE) allowing for unobserved heterogeneity among individuals (Baltagi, 2005). This issue is quite important in the context of migration analyses as previous research has shown that movers represent a selective group of the population and that this selectivity is in part caused by unobservable characteristics of the respondents that also affect labour market outcomes (like ability or job commitment) (Antel, 1980; DaVanzo / Hosek, 1981). Using the full information of the longitudinal data structure variables in each period are computed as deviations from their mean values over time for each individual, which is equivalent to including a fixed unit effect for every respondent. In this way, all time-invariant individual factors that are related to income and to migration including those that cannot be observed or are difficult to measure are netted out from the earnings equation. As a consequence effects of variables that do not change over time cannot be estimated, but they also do not have to be controlled to assure unbiased results.[8] This enables us to focus primarily on the variables of interest – here the moving decision and the mechanisms behind as derived in the hypotheses.[9] Although time-invariant variables cannot be estimated in fixed effects models, they can be interacted with variables that *do* change over time, for example with the household move, render-

[7] Restricting the sample only to waves in which women are employed would bias the results, because females who experience greatest income gains and losses – those who stop working or take up a new job – due to migration would be excluded. Especially in the present analysis, this would not be straightforward, because regional labour markets are assumed to have strong impact on employment opportunities. As we are interested in the "real" outcomes after a move, selection models are not appropriate here either. Therefore also log earnings are not used here, because the substantial number of zero earnings would make estimation of a log-income panel model problematic.

[8] Of course, this applies only to unobserved heterogeneity which is due to stable characteristics; differences between persons that arise over time still may cause biased results and in case have to be controlled.

[9] This limitation of scope is also justified by the fact that the interest of this paper is not in estimating the *returns to* a move in a basic earnings equation (which might call for additional controls or even a different model), but in the *outcomes after* a move assuming *collective decision-making processes* in the household where selectivity of the decision is assumed. Here the main focus is on two aspects causing this selectivity: the household characteristics (educational structure of the households) and regional factors (captured in the effect of moving to the city).

ing more insights into the mechanisms behind mobility decisions – as will be shown in the empirical investigation that follows. The coefficients obtained by the panel fixed effects approach thereby represent the average change in individual income (the income development) due to a change in the respective independent variable, whereas the interaction effects reflect these changes depending on different levels of the interacted variables (e.g. outcomes of a move by different levels of education).

Table 1

Socio-economic characteristics of partnered women (stayer and mover): SOEP 1992 – 2006

	Mover[1]			*Stayer*		
	N[2]	*mean*	*std. dev.*	*N*	*mean*	*std. dev.*
Age	9075	*37.2*	9.504	63660	*42.0*	10.211
Married	9075	*0.78*	0.414	63660	*0.88*	0.329
Child living in household	9075	*0.56*	0.496	63660	*0.51*	0.499
Education (in years)	8923	*12.68*	2.851	62500	*11.67*	2.470
Higher secondary completed	9075	*0.27*	0.445	63660	*0.14*	0.345
higher secondary, both partners	8433	*0.18*	0.390	60558	*0.08*	0.265
Metropolitan area	8382	*0.13*	0.334	59403	*0.12*	0.320
Work experience (in years)	9035	*11.5*	9.892	63462	*15.1*	10.184
Employed	9075	*0.65*	0.477	63660	*0.64*	0.479
Employed full-time	9075	*0.35*	0.477	63660	*0.33*	0.471
Unemployed	9075	*0.06*	0.229	63660	*0.07*	0.256
Monthly labour income, gross	9074	*1072.7*	1243.2	63655	*982.5*	1223.2
Monthly labor income partner, gross	8430	*2759.2*	2177.3	60552	*2312.5*	2314.5
White-collar	9075	*0.41*	0.492	63660	*0.40*	0.489
Blue collar	9075	*0.12*	0.119	63660	*0.16*	0.364
Civil Servant	9075	*0.04*	0.192	63660	*0.03*	0.180
Self-employed	9075	*0.06*	0.241	63660	*0.04*	0.210

[1] Contains all women who moved at least once with their partner for job reasons during the observational window.

[2] *N* = person-years. Explanation of variables: age (in years): a dummy for married, a dummy for child in household, education (in years): higher secondary completed (1 = respondent has "Abitur"); both partners completed higher secondary (1= both partners have "Abitur"): work experience in years, employed (1 = employment, also irregular and part time employment) (1 = full time employment): unemployed (1 = registered unemployed):monthly labour income (gross, deflated with base 2001): a dummy for each occupational position (white-collar, blue-collar, self-employed, civil servant ["Beamter"]).

Source: Own calculations based on SOEP waves 1992 – 2006.

5. Results

The present chapter yields results of different panel fixed effects estimations models, where the relationships assumed in the hypotheses 1 – 3 were captured by modelling interaction effects between migration and education (model 1), migration and living in metropolitan areas (model 2) and a three-way interaction term measuring the multiplicative effect of educated women moving to metropolitan regions (model 4). Due to the FE-Methodology requiring intrapersonal variation of the respective variables the estimation of the migration effects is based on the movers' sample (N = 495).[10] Beside the interaction terms, the main effects were also included; but it is important to mention that in the FE-estimation these variables do not reflect the returns to education or to living in a metropolitan area as for example in conventional OLS applications. Estimation of these effects is based solely on values that changed over time. Thus the coefficient of *education* reflects the average return to an additional year of education attained by individuals during the observational period, whereas the estimates of the variable *metropolitan area* display the effect of changing the living area, i.e. moving to a metropolitan area (but not necessarily moving there for job reasons). In order to account for any time trend or period effects, which could bias the results, a full set of year dummies was included (not reported).

The results of the estimation models are widely consistent with the theoretical assumptions – though to some extent distinct from empirical evidence of previous research. While most studies identify negative effects of residential mobility for women in partnerships, the approach used here shows a more differentiated picture. As the first model suggests, with higher levels of education women do significantly and substantially better after a move in terms of income compared to their less educated counterparts. While women with only 9 years of schooling have negative outcomes after a move, college-educated women might have advantages from a move in absolute terms. This contradicts earlier findings, where especially educated women were found to have detrimental career developments after a move (Lichter, 1983). However those studies are mostly based on data of the 1970s and 1980s, thereby not fully capturing the ongoing increase in female work participation rates and returns to education of the past decades. Due to these developments female earning potentials have further risen, pushing the threshold for a household move to pay off upwards. The positive consequences of migration for higher educated women found in this analysis then reflect the increased selectivity of coupled relocation decisions due the increased women's earning power and higher contributions to the total household income. In line with the argumentation in this

[10] Estimation of the other effects is of course based on different numbers of observation depending on the number of persons who have variation over time in the respective variables.

Table 2: **Panel fixed effects estimates of the effect of migration on monthly gross labour income of coupled women**

	(1)		(2)		(3)		(4)		(5)	
	coeff.	robust s.e.	coeff.	robust s.e	coeff.	robust s.e	coeff.	robust s.e	coeff.	robust s.e
Move	–129.6***	(75.514)	*20.8*	(50.474)	*–135.7**	(77.816)	*–76.3*	(79.520)	*–104.4**	(59.968)
*Move * Education*	*47.2****	(17.254)			*42.6****	(16.504)	*24.2*	(17.673)	*31.4***	(13.223)
Education	*31.0****	(10.272)			*27.2****	(10.125)	*30.9****	(10.711)	*14.9**	(8.240)
*Move * Metropolitan*			*249.0**	(138.508)	*212.6*	(133.362)	*–219.7*	(193.365)	*–69.6*	(138.737)
Metropolitan			*–49.2*	(59.817)	*–40.8*	(62.200)	*55.9*	(69.412)	*39.2*	(49.453)
*Move*Metro*Education*							*98.2****	(40.587)	*54.2**	(39.464)
*Metro*Education*							*–28.2*	(20.191)	*–24.7*	(15.153)
Experience									*90.6****	(4.651)
Experience^2									*0.0*	(0.092)
White collar									*308.6****	(13.680)
Self-employed									*331.8****	(45.204)
Civil servant									*742.0****	(56.882)
Industry sectors (NACE 1-digit)									yes[1)]***	
rho	0.787		0.811		0.805		0.806		0.891	
r2 (within)	0.052		0.050		0.053		0.054		0.428	

* $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$.

Robust standard errors adjusted for panel-clustering; yearly period dummies included (not reported). Explanation of variables: gross monthly labour income (deflated, base 2001): move (1 = move due to job reasons): education (education in years, centered at 9 years of schooling): metropolitan (1 = city > 500,000 inhabitants): experience (labour market experience in years): occupational position dummies (white-collar, self-employed, civil servant / ref.category blue collar and non-defined): industry dummies (NACE 1-digit recode: agriculture, energy, mining, manufact., construct., trade, transport, bank & insurance, service, not applicable).

[1)] Industry variables jointly significant at 1% level.

Source: Own calculations based on the SOEP waves 1992 – 2006.

paper are also the effects of moving to large cities. Here an average income premium of 246 Euro over the observational period can be attributed to moving to metropolitan areas.[11] This finding supports the relevance of regional opportunity structures when determining the labour market outcomes of mobile coupled women. It seems that directing moves to areas with favourable labour market conditions is a strategy for couples to attain economic advantages by ensuring both partners acceptable employment. Although these results are consistent with some other studies using different data (Phimister, 2004; Lehmer / Möller, 2006), at this point of the analysis it is not clear yet, if this strategy is useful for all groups of partnered females. Results of model 3 give a first hint about the relevance of this notion. When including both interaction effects simultaneously in the analysis, the effect of moving to large cities becomes somewhat smaller and statistically insignificant, indicating that there might be some overlap between the positive effects of moving depending on the skill level and the migration to large cities. Model 4 gives a more explicit impression of the underlying mechanism by including the three-way interaction between migration, educational level and destination of the move: First of all, it is the better educated women who profit from moving to metropolitan areas, having clearly better income developments after migration compared to both, women with lower skills, and women who move to less urban regions.[12] These findings are in line with other empirical evidence suggesting that the occupational and labour market structure of large cities is considerably more favourable for high-ability females (see for example Clark, 1990), whereas for women with lower educational attainment moving to large cities obviously does not prevent them from having economic disadvantages.

Using the fixed effects approach the models so far concentrated on testing the relationships derived from economic household theory in chapter 3. The last model (model 5) goes beyond that giving further insight into more general factors explaining income development, like change of occupation, industry or effects of additional work experience.[13] While the previous results still hold, we however do find that the effect of educated women moving to metropolitan

11 At first sight the negative sign of the main effect of moving to metropolitan areas might be surprising. But one should consider that this coefficient captures the effect of moving to metropolitan areas for different reasons than for job reasons. However, these reasons might be very heterogeneous in nature ranging from lifestyle to family related motives. Hence the effects of this variable should not be overinterpreted.

12 A deeper analysis of this interaction effect following the suggestions of Dawson / Richter (2006) reveals significant differences between the slopes of highly educated women moving to large cities and all other groups of women; results are available upon request.

13 Again, the coefficients of these variables reflect the effects of a change (for example into the respective occupational group) on earnings. One should also consider that a lot of effects are captured in these variables and also that civil service jobs in Germany are mostly high profile jobs, which explains the size of these coefficients.

areas somewhat decreases, especially when including the occupational and industry variables. This confirms the idea of urban areas providing a specific occupational and economic structure, which ultimately makes them attractive destination areas for migration of households with (higher educated) partnered women.

6. Conclusion

This paper hypothesized that the regional opportunity structure and the household composition should be taken into account when analyzing the labour market outcomes of partnered women following a household move. With higher educational levels of women – indicating their higher income potential – it becomes more difficult for households to reach a positive net gain by mobility, because job-related locational conflicts between the partners are more likely to emerge. This makes relocation decisions of households even more selective: a move will not be observed, unless both partners profit from the move. In our investigation this becomes evident in the differential outcomes of mobility for women with high and low education. At the same time the labour market structure of the potential destination region has a significant influence on the probability of a positive net gain to occur at all: moving to the large labour markets of big cities increases the chance of a pareto-optimal outcome. Couples can take advantage of the greater availability of jobs and career options (for women) in metropolitan areas and direct the moves to these regions. As the empirical results yield, especially higher educated women can profit from this. This is consistent with empirical evidence suggesting that the occupational and industrial structure of large cities is especially favourable for high-educated individuals.

In past decades the educational level and labour force attachment of women has risen, rendering mobility decisions in the household context even more difficult and making locational conflicts nowadays even more virulent. The possibility to control the outcomes of a move by choosing more favourable regions might therefore gain relevance, especially for high-ability couples. The attraction of large metropolitan areas can therefore be expected to become even more important in the future – not only for workers but also for employers. Locating companies in large cities could improve worker-firm matches by facilitating geographical relocation of the increasing number of employees, who face mobility restrictions because of their partners' employment. While the scope of this article was limited to the outcomes of mobility decisions in a general way, a more detailed analysis of employment and wage effects for both men and women induced by household mobility to different labour market regions, as well as analyzing the mobility decision directly, could give further insights into the topic.

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