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Exposure to international migration and its effect on childbearing in Turkey

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Abstract

International migration alters social norms, family structures, and population development in sending regions. Each of these factors affects fertility, making the impact of international migration on childbearing an increasingly important area of study. In many sending regions, the Demographic and Health Surveys (DHS) provide a promising, but underutilized, source of data for understanding the relationship between international migration and childbearing. Using the household and individual questionnaires in the 2003 Turkish DHS, we develop a multi-layered approach for measuring international migration. We then use these measures to examine differences in childbearing among women in migrant and non-migrant households, assessing the effects of migrant selection and migration-related role and attitude changes on the number of children born. After adjusting for selection characteristics, we find return female migrants and migrant wives are not significantly different from women in non-migrant households; role and attitude changes have only modest impacts on the association between women's exposure to migration and childbearing.

Introduction

Much of the published literature assessing the relationship between migration and fertility focuses on women's migration and childbearing behavior in destination areas, highlighting the role of economic factors and social inclusion in altering behaviors. The impact of international migration on childbearing in sending areas has received less consideration. Scholars and policy makers increasingly draw attention to the importance of migration's fluid nature, the structural and attitudinal barriers to migrant integration, the development and meaning of transnational identities, and sending households' reliance on remittances. We contend that the relationship between migration and fertility in sending regions is also a potentially important factor to consider. Identifying the mechanisms by which the process of migration influences fertility can contribute to our assessments of how migration alters social norms, family structures, and population development within regions of origin.

Turkey provides a useful case for assessing the impact of international migration on childbearing due to the fact that international labor migration has played an important economic role since the 1960s. Early guestworker agreements, negotiated by the Turkish government with several Western European nations, were a key part of the national economic development strategy. Opportunities to participate in guestworker programs prompted wide-spread male labor migration from Central Anatolia and the Aegean area, most notably into Germany in the 1960s and early 1970s (Reniers, 1999; Koç and Onan, 2004). During this period, guestworkers' wives and children usually remained in their communities of origin. When destination states terminated guestworker programs in the 1970's, some Turkish workers returned to their families. Others settled abroad, often bringing their wives, children and extended family to host countries through policies of family reunification. This initiated a new phase of Turkish migration, one in which migration operated largely through social, rather than state, networks, and the composition of migrants changed substantially (Koç and Onan, 2004).

Migrant flows and the patterns of international destinations from Turkey are dynamic and diverse. Although Europe remains a primary destination for labor and family migrants, numerous other countries, such as the Gulf States and countries of the former Soviet Union, are emerging as important migrant destinations. Sending regions are also shifting, with new areas in Turkey, such as Southeastern Anatolia, increasing in importance as the sources of migrants (Içduygu et al., 2001; Koç and Onan, 2004). This active migration history results in a substantial number of Turkish households, across several regions, with members reporting international migration experience.

How has the experience of migration within households influenced women's fertility in Turkey? In this analysis, we use data from the 2003 Turkish Demographic and Health Survey to compare the fertility of women who have varying levels of exposure to international migration: return female migrants, wives of migrants, women living in households where another family member is a migrant, and women in non-migrant households. Specifically, we seek to assess whether, after controlling for the socio-demographic differences between women in these groups, there are significant differences in the reported number of children born to women in non-migrant versus migrant households, and whether the effect of migration varies by nature of women's migration exposure.

Background

Research on migration and fertility suggests several ways in which migration may affect women's childbearing. One approach stresses the importance of migrant selectivity, contending that characteristics associated with migration, such as stage of family formation, place of origin and educational attainment, tend to generate different rates of childbearing. Additionally, migrant households tend to follow unique patterns of family formation and household decision-making in comparison to non-migrant households, affecting women's fertility preferences and ability to negotiate these preferences (Singley and Landale, 1998; Lindstrom and Saucedo,

2002; Timmerman, 2006). While many characteristics of selectivity are measured at the individual level, we anticipate selection and family formation effects to also influence the family members living in migrant sending households, prompting differences in fertility among women in these households compared to women in households without migration experience.

Given that young adults are often most likely to migrate, an individual's stage in the life course is a particularly important pathway for the effect of migrant selectivity on fertility (Singley and Landale, 1998; Lindstrom and Saucedo, 2007). Migrant women are more likely to be single, or migrate early in their marriage when they have few children, while women with larger families tend to remain in their communities of origin (Kadioğlu, 1997; 1994). In countries where patterns of temporary male labor migration predominate, such as Turkey, male migrants may view migration as part of a transition to adulthood, a time for income accumulation in order to establish independent households upon return, or as a means to support their families remaining at origin (Massey et al., 1987; Koç and Onan, 2004; Parrado, 2004). If migrant men tend to be younger than average, it is also likely that wives of male labor migrants, will be younger, and married for less time than women in non-migrant households. Therefore, we may expect that these two groups of women, migrants and wives of migrants, will tend to have fewer children than women with less direct connections to migration and still fewer in comparison to women in non-migrant households.

Research on Turkish migration also supports the importance of other migrant selectivity effects in influencing fertility differentials between migrant and non-migrant households. Factors such as *urban* residence and higher educational attainment increase both the likelihood of migration and decrease desired family size, but the influence of residence in Turkey is complex. While earlier labor migrants tended to originate from rural areas, their migration was frequently a two-stage process, whereby they first relocated to urban areas within the country and then made an international migratory trip (Reniers, 1999; Schoenmaeckers et al., 1999). This initial move toward urban areas also led wives of migrants to move to urban areas to join

extended kin networks, where they would be exposed to social norms less supportive of high fertility than in rural regions (Kadioğlu, 1994). Urban areas, where fertility rates are lower, have served as origins for many international women migrants, as well as primary settlement areas for return migrants (Kadioğlu, 1994; Day and İçduygu, 1997; Koç and Özdemir, 2004).

Several studies find that Turkish migrants are positively selected on education (Reniers, 1999; Koç and Onan, 2004). In his study comparing the characteristics of Turkish migrants to Belgium with non-migrants in Turkey, Reniers (1999) finds that relative to non-migrants, Turkish labor, family-reunification, and family-formation migrants all had higher levels of educational attainment. Koç and Onan (2004) report increasing educational selectivity, with higher levels of educational attainment in more recent migration waves compared to earlier migrant generations. Given the powerful, negative, influence of women's education on fertility, even across social, political and cultural divisions (Jejeebhoy, 1995), these findings suggest individuals living in migrant households will tend to have lower fertility than non-migrant households, due to their higher levels of education. This should be particularly true, and larger in effect, for female migrants relative to women residing in households with migrants. There is some evidence from Turkey that educational levels do vary among women linked to migration, with women migrating from Turkey reporting higher levels of education than those who remain. (Kadioğlu, 1994; Day and İçduygu, 1997).

While migrant selectivity on urban residence and higher levels of education may lead to lower fertility, other studies suggest migrant selectivity also operates on factors associated with higher fertility. Traditional marriages involving kin (versus romantic) selection of partners and payments of bride's prices (i.e. financial compensation paid to the bride's family for loss of her labor) are common in Turkey (Delaney, 1991; Remez, 1998; Önder, 2007), and may be more prominent in migrant households. Several studies point out that Turkish migrants frequently marry partners from their communities of origin, unions often arranged by parents (Lievens, 1999; Reniers, 1999; Gonzalez-Ferrer, 2006; Timmerman, 2006). This may be due to the fact

that both families at origin and destination perceive marriage as a mechanism for reinforcing ties across migrant networks. For families in Turkey, marriage within migrant networks provide opportunities for socioeconomic mobility, potential remittance income, social surveillance and even access to otherwise unattainable foreign work visas (Timmerman, 2006; Gonzalez-Ferrer, 2006). Migrant families abroad see the choice of a partner from the country of origin as a means to solidify ties with Turkey, while also assuring the selection of spouses untainted by foreign influences (Timmerman, 2006; Beck-Gernsheim, 2007). Scholars have linked these household strategies of family formation to attitudes limiting female autonomy and decision-making and lower social status - characteristics associated with high fertility (Kadioğlu, 1994; Remez, 1998).

A second approach to the study of migration and fertility focuses on the attitudinal and ideational changes caused by international migration. Through both direct exposure to different social norms and family patterns, as well as social remittances, migration changes childbearing strategies. Migrant experiences at destination may include changing social roles, exposure to new fertility norms and perceptions of women's status and greater access to health information and resources. These experiences and ideas may then flow back to origin families, either from return migrants or as social remittances from communication across transnational networks (Lindstrom and Saucedo, 2002; Frank, 2005; Fargues, 2006). The impact of these social remittances is likely to be more pronounced in areas where migrant network connections are strong, forging resilient ties and communication channels between origin communities and migrants (Levitt, 1998).

At origin, changing responsibilities within migrant households may also alter social norms and expectations, which in turn influence fertility. Household tasks typically completed by the migrant fall upon remaining household members, challenging traditional gender divisions of labor. For women within migrant households this often translates into increased financial responsibilities, including working outside the home in order to earn income to sustain the family

until they receive remittances from abroad. These new roles may then change attitudes toward gender roles and expectations in the household, increasing women's ability to negotiate with their partner about fertility and family size and leading to smaller sized families (Remez, 1998; Kalaycioğlu and Rittersberger-Tiliç, 2000; Yavuz, 2006; Gündüz-Hoşgör and Smits, 2008). Additional research points to women in migrant households obtaining greater degrees of autonomy, although empirical studies indicate these changes may be temporary, limited only to the period of migration (Hondagneu-Sotelo, 1992; Kadioğlu, 1994; Buckley, 2005).

Studies of both migrant households and migrant women in Turkey indicate that international migration enhances women's autonomy by contributing to changes in attitudes toward women and women's status. The degree of these changes, however, varies according to the individuals' exposure to migration. Day and İçduygu (1997, 1998) find that migrants' relatives who remained at origin hold somewhat more conservative attitudes towards religion, women's status, and reproductive behavior than either male and female return migrants, even though individuals in both these groups appear less conservative on these values than individuals who did not have any migrant connections. In research on the international migration experiences of Turkish women, Ayşe Kadioğlu (1994, 1997) finds that both migrant women and non-migrant women within migrant households report greater financial independence and are more likely to question traditional gender roles than women in non-migrant households. While Kadioğlu finds that return female migrants experienced greater improvements in status, the differences are moderate, and women in this group reported that their elevated autonomy, achieved through work while abroad, abated once they returned to Turkey (Kadioğlu, 1994). Such findings call into question the long-term effect of social remittances on attitudes of women within migrant households in Turkey.

Research on the links between fertility, migration selectivity, and processes of social change associated with migration highlight several potential pathways through which migration may influence childbearing. The key pathways in this literature include stage in the life course,

place of residence, levels of educational attainment, marital arrangements, perceptions of traditional gender roles and other social remittances. Relative to women in non-migrant households, fertility is likely to be lower among women migrants, migrant wives and among women living in migrant households. The negative effect of migration on fertility will likely be greater for return female migrants compared to wives of migrants and other female household members.

Employing the reported number of children ever born as a marker of fertility in Turkey, we test the effects of migration within the household, spousal migration and female migration on fertility. We believe that focusing on cumulative childbearing will maximize potential differences between our comparison groups, whereas period measures would be subject to the influence of temporary absences associated with migration, which the present data (lacking measures of migration timing and duration) does not enable us to control. Controlling for basic indicators of selectivity and ideational change, we examine differences in the number of children ever born between ever-married women of reproductive age within migrant and non-migrant households and across categories of exposure to migration.

Our three key hypotheses are:

1. Ever-married women with any exposure to international migration tend to report lower numbers of children ever born than women living in non-migrant households.
2. Among women with exposure to international migration, return female migrants and wives of migrants should tend to report lower numbers of children ever born than other women residing in migrant households.
3. Differences in stage in the life course (i.e. marital duration), residence, educational attainment and attitudes supporting patriarchal gender roles will tend to attenuate the effect of migration exposure on women's fertility.

Testing these three hypotheses allows us to assess fertility differences by household migration status and exposure to migration. The results will add to our understanding of how

migration may influence the fertility of origin populations, clarify the importance of migrant selectivity in explaining observed fertility differentials and generate preliminary evidence concerning the importance of possible pathways for the influence of social remittances on fertility.

Data and Methods

Our analyses use data from the 2003 Turkish Demographic and Health Survey (TDHS), a large-scale national survey of 8,075 ever-married reproductive age women (15 to 49 years old)¹. We focus on two specific components of the survey: the household roster and the woman's individual questionnaire. The household roster collected information on regular household members, and included an indicator of migration, recording the household members' place of residence five years prior to the survey. The individual questionnaire provides detailed information on women's age, marital status, marital arrangements, employment and attitudes toward patriarchal gender roles, in addition to fertility histories. Our analyses link these individual records to household-level data to identify migrant households and migrant types.

Identifying Migrant Households and Types of Migrants

As Bilsborrow (2008) points out, while they exclude from assessments those households who migrate together, the Demographic and Health Surveys (DHS) are a promising source of data concerning migration, due to the large number of households surveyed, the availability of proxies to report on migrants, and detailed information on children. Basic information on migration is available across DHS surveys in the form of a household roster (Ayad et al., 1997). Roster information is typically supplemented by questions concerning lifetime residence, women's individual migration experience, type of last residence (rural or urban) and in some cases indications of timing of moves within the last year or last five years (Bongaarts, 2001; Brouckhoff and Yang, 1994). Questions regarding the expected return of household members, as well as the country of residence for those in migration, are included in

some countries (Johnson, 2007). However, in terms of migration, the level of detail varies significantly across countries and waves of the DHS.

The 2003 TDHS lacks detailed migration histories, prompting us to combined basic information from the household roster (which noted whether individual members were currently abroad or resided abroad five years prior to the survey) with indicators from the individual woman's questionnaires to create the basic division between migrant and non-migrant households. We then further divided women resident in migrant households into one of three groups to characterize their exposure to migration: return female migrants, wives of current or return migrants and other women living in households with international migration experience. This resulted in four total categories of women, including those living in non-migrant households.

To identify return female migrants, we used information from the household roster where the household respondent reported that a female usual household member resided abroad five years prior to the survey date (n=48). Twenty-eight of these women met the eligibility criteria for the TDHS ever-married woman's questionnaire and completed the interview. In order to capture return migration that may have taken place more or less than five years before the survey, we also included women who reported their last place of residence as "abroad" on the individual questionnaire (n=155). Using these two indicators of return migration, we identified 161 return female migrants.

To classify migrant wives, we matched married women to spouses using usual residents' line number and three indicators from the household roster. The 1998 TDHS asked married women if their husband was living with them or elsewhere, but the 2003 TDHS does not include this question. In 1998 TDHS, there was substantial, although not complete, overlap between a husband listed on the household roster and a woman reporting her husband as living in the household. Therefore, in absence of an explicit question on husband's residence, we used the household roster information as a substitute. We considered currently married women whose

spouse was not listed on the roster (n=366) to be wives of migrants; 227 of these women were eligible for and completed the individual interview. We also classified currently married women who were matched to spouses residing abroad at the time of the survey (n=9) or whose spouse resided abroad five years prior to the survey date (n=37) as wives of migrants. Because not all of the women in this latter group were married to their spouses when he lived abroad, we relied on information on marital duration from the individual questionnaire and omitted those women who were not living in a first marital union for five or more years. Through combining these measures, we identified 247 women who completed the individual interview as wives of migrants. A small number of these women had been migrants themselves, and were included in the female migrant category – leaving 228 individuals classified as wives of migrants.

Women who are neither return migrants nor wives of migrants, but who live in a household where at least one usual resident reported international migration experience constitute our third category. From all survey respondents neither identified as migrants or migrant wives, six lived in households with a member currently abroad, 13 lived in households where a resident had resided abroad five years prior to the survey, and 275 were living in households where a spouse of another household member was not listed on the roster. We also included women living in households with identified female migrants (n=5) in this category. Using this combination of indicators, we identified 296 women living in migrant households.

Given the complex nature of estimating migration experience, and our need to rely upon indirect specification approaches, we then compared our measures of migration in the 2003 TDHS against other estimates of migration in Turkey, focusing on regional patterns of migration intensity. We computed regional frequencies of migration using a “maximum measure” of migration, counting any household member on the roster whose last residence was abroad, was currently lived abroad or was a spouse of a household member not listed on the roster as a migrant. In reviewing these frequencies, we found that areas reported in the literature as primary sources of international migration, such as Central and Southeastern Anatolia and the

Aegean (Koç and Onan, 2004; Reniers, 1999; 2001), did not constitute the largest percentages of migrants identified in our approach to the TDHS (Table 1), a potential source of concern. We then compared our results to more recent estimates of international migration from Turkey. A report by Coşkun used the 2000 Turkish national census to compute provincial rates of international migration, using information on a regular household member's current residence (Coşkun, 2006). He then categorized provinces according to migration intensity. These rates are likely to underestimate actual migration since they did not include household members' residence five years prior to the 2000 census; however, they are the only recent regional statistics available.

[Insert Table 1 about here]

Our reliance on indirect estimators, such as unregistered spouses, in our constructed measures may tend to overestimate migration. In order to focus on areas in which our constructed measures were more likely to identify migrants and migrant households, we restrict our analysis to the 65 provinces identified by Coşkun as high migration regions (provinces with rates of five or more migrants per 1000). This approach should maximize the number of observations across migration type, and enable us to focus our analysis on areas where migrant networks are robust as previous research indicates that the potential effect of social remittances would likely be stronger in such regions (Levitt, 1998). As a final means of refining our migration measures, we excluded from our analysis women living in the metropolitan area of Istanbul, an area demonstrating significantly different trends in a variety of fertility indicators than the rest of the country (Koç and Özdemir, 2004). By focusing on this restricted set of provinces, we retained a considerable percentage of the women originally identified within our three migrant categories, as nearly 75 percent of reproductive age women identified as living in a migrant household in the 2003 TDHS lived in these higher migration provinces. In the remainder of our analysis, we use this restricted sample of 5,927 ever-married women: 128 return female migrants, 172 wives of migrants, 210 women living in migrant households, and

5,417 women in non-migrant households. These refinements of the sample used for analysis result in a somewhat improved association between the constructed migration measure and region of residence (Table 1).

Characteristics of ever-married women

In addition to women's exposure to migration, we examine age, duration of first marriage, rural residence, educational attainment, current employment, traditional marriage arrangements, patriarchal attitudes and the number of children ever born. We divided women into the following age groups: 15 to 19 years, 20 to 29, 30 to 39 and 40 to 49. We categorized duration of first marriage into five year intervals, and classified women's highest level of education into the following categories: no education, primary, and secondary education or higher. Given past research findings, we considered whether a woman was currently working outside the home as an indicator of enhanced women's status.

We construct a composite score on traditional marriage arrangements, based on previous research, from questions on whether a woman had an arranged marriage, whether a religious (versus civil) marriage ceremony was priority, if her family was paid bridesmoney, and if the marriage was a consanguineous union (Remez, 1998; Ergöçmen et al., 2004; Yavuz, 2006). Assigning one point to each affirmative response, we generated a score ranging from 0 (not at all traditional) to 4 (very traditional). We use a similar composite measure for patriarchal attitudes. Women's agreement or disagreement with the following items were included in this measure: men should make the important decisions in the family, men are wiser than women, a woman should not argue with her husband even if she disagrees with him, and it is better for a male child to have an education. We assigned one point to each item with which a woman agreed, resulting in an attitude score that ranged from 0 (egalitarian attitudes) to 4 (patriarchal attitudes).

Finally we used the total number of children ever born (CEB) to assess the impact of migration on fertility. The total CEB was based on women's self-report of live births.

Methods

First we examine demographic and selection characteristics as well as migration-related role and gender attitude changes for ever-married women according to their exposure to international migration. We calculate weighted means and standard deviations for continuous variables and percentages for categorical variables. We test for statistically significant differences between migration groups on these characteristics using linear and logistic regression models for continuous and categorical variables, respectively.

To assess the relationship between the migration exposure categories and cumulative fertility, we used Poisson regression, given that children ever born, our outcome of interest, only takes on positive integer values². We first model the effect of the migration exposure variables to test hypotheses one and two, contending that women with migration exposure have fewer children than those living in households without migration experience and more direct exposure to migration will be associated with lower numbers of CEB. We evaluate our third hypothesis using several separate models. To control for possible differences in women's place in the life course, we include duration of women's marriage in the model; we include this measure as it provided a statistically significant better fit to the data than women's age and best reflects women's exposure to the risk of pregnancy. Given the strong correlation between CEB and marital duration and the predictive power of this indicator, we include it in all subsequent models. Next, we assess whether the effect of migrant selection changes the association between migration exposure and CEB by including educational attainment, rural residence, and traditional marriage arrangement score as covariates in the model. Finally, we evaluate whether migration-related status changes (measured using current employment and our composite measure of adherence to patriarchal attitudes) affect the association between the migration exposure groups and total CEB.

Results

We present characteristics of our sample (ever-married reproductive aged women resident in high migration regions) by category of migration exposure in Table 2. Patterns of selectivity point to differences between migrants and non-migrants, but the trends are inconsistent. Women living in households where another family member was a migrant had higher traditional marriage scores but *lower* levels of individual education relative to women living in non-migrant households. Wives of migrants did not demonstrate statistically significant differences on migrant selection characteristics (i.e. education, rural residence and traditional marriage scores) in comparison to women living in non-migrant households. However, within our sample, this group of women was younger and had shorter marital durations than women without exposure to international migration. Women who migrated themselves exhibited several of the characteristics suggested to be associated with migrant selection. This group had higher levels of education and was less likely to live in rural areas than women in non-migrant households. Migrant women reported the lowest traditional marriage score among all groups of women, but data limitations preclude a detailed analysis of how this might have changed before and after migration, or whether the respondent migrated alone or with her spouse.

[Insert Table 2 about here]

We did not find consistent differences between our categories of exposure to international migration and characteristics believed to be associated with changes in social roles and attitudes. Neither women living in migrant households nor wives of migrants appear to be significantly different than women in non-migrant households on measures of employment or patriarchal attitudes. Table 2 indicates that women in these two groups are not more likely than women in non-migrant households to believe that women are relatively equal to men. However, return female migrants did have significantly lower scores on the patriarchal attitudes scale (0.95 as compared to 1.31 for women in non-migrant households). In general our initial results fail to support findings reported in the literature, where authors found wives and relatives of

migrants occupy a middle position on selectivity factors and attitudinal endorsements relative to return migrants and non-migrants (Kadioğlu, 1997; 1994; Day and İçduygu, 1997; 1998).

In terms of migration exposure and children ever born, we find a more direct relationship. Among women whose only exposure to international migration is through a household member other than her spouse, there is no significant difference with non-migrant women, disproving our first hypothesis. Women with more intensive exposure to migration, either as a migrant or the spouse of a migrant, did exhibit significantly lower fertility, confirming our second hypothesis. Migrant wives and return female migrants had, on average two children compared to women in non-migrant households who reported an average of 2.7 children. The effect of migration on CEB, therefore, appears dependent upon personal experience or migration within the couple, as there are no significant differences between women living in households where another family member was a migrant and women in non-migrant households.

We then use Poisson regression to investigate how migrant selection and migration-related changes in roles and attitudes might explain the differences in CEB. Both return female migrants and wives of migrants had lower mean number of children than women in non-migrant households; the association was similar for both groups, and the model had very modest overall predictive power (Table 3; unadjusted model). After adjustment for marital duration (Multivariate Model 1) the association between CEB and wives of migrants is attenuated, but remains statistically significant; controlling for marital duration did not substantially affect the association for return female migrants. Not surprisingly, marital duration is a powerful predictor and improves the overall fit of the model.

[Insert Table 3 about here]

In the second multivariate model we include respondents' education, residence and traditional marriage arrangements in addition to marital duration. After the addition of these indicators of selectivity, migration exposure, regardless of type, loses significance as a predictor of CEB for ever-married women, and there is a substantial improvement in model fit. This lends

support to our third hypothesis about the importance of selectivity factors in explaining the variation between non-migrant and migrant fertility. Specifically, women with primary and secondary education tend to have fewer children in comparison to women without formal education, controlling for other factors in the model. Additionally, those residing in rural areas and displaying higher traditional marriage scores are more likely to report higher numbers of children born. These findings are also consistent with noted patterns in Turkish fertility (Koç and Özdemir, 2004; Remez, 1998).

In order to better estimate potential differences between the effects of selectivity and possible changes in attitudes and behaviors as a result of migration, we substitute measures of current employment and reported patriarchal attitudes for education, residence and traditional marriage arrangements in Multivariate Model 3. In this model, which also includes marital duration, both migrant spouses and female migrants exhibit a lower mean number of children in comparison to non-migrants. Current employment exhibits a modest, negative influence on CEB. Higher patriarchal attitude scores, on the other hand, exert a small but strong, positive effect. While the results of this model indicate that roles and attitudes do not appear to explain the fertility differentials between migrants and non-migrants, they do corroborate findings elsewhere in the literature regarding the independent effects of indicators of women's status on fertility (Remez, 1998; Gündüz-Hoşgör and Smits, 2008).

Discussion

Our central motivating question, whether Turkish women with varying exposure to international migration exhibit significantly different fertility outcomes than women without migration exposure, remains only partially answered. Based on an analysis of the 2003 TDHS, we find that there is a link between international migration exposure and CEB, but after controlling for marital duration, this link was not evident for all types of migration exposure. In Turkey, women who have returned from migrating or who have had a spouse in migration

display a lower mean number of children born relative to non-migrants, while women resident in migrant households are indistinguishable from women in households without migration experience. We trace the link between migration and fertility for female migrants and migrant wives to socio-demographic differences related to migrant selectivity, and illustrate a potentially important pathway between fertility and migration operating through normative and attitudinal changes often viewed as an outcome of migration. These findings add to our understanding of the complex relationship between migration and fertility, while highlighting the importance of assessing different types of migration exposure separately.

In our analyses return female migrants tend to be better educated, more urban and slightly older than women in other categories of migration exposure. Women in this group also report more egalitarian attitudes and views towards women's status in comparison to non-migrant women, women in migrant households and migrant spouses. The difference in the number of children born between female migrants and non-migrants was explained through characteristics associated with migrant selectivity. While attitudes and behaviors linked to the effects of migration are significant for female migrants, they appear to have only modest impacts on the association between women's own migration experience and fertility. This might reflect measurement issues, as we are unable to determine whether individual women migrate by themselves or tied to another migrant. Similarly the use of more direct indicators to reflect changes of women's status and fertility, such as abilities to negotiate contraception and family size, might yield different results.

The wives of international migrants also reported having fewer children relative to non-migrants and, in our analyses, display a negative bivariate link to CEB, which is very similar to women migrants. In multivariate models, both migrant selectivity factors and measures of women's status influenced fertility among the wives of migrants, but the effects were more modest than for women migrants. The fertility differences between migrant wives and women in non-migrant households were largely explained by the duration of women's marital unions.

Male labor migration is likely to be intertwined with other early life course processes such as family formation. Shortly following marriage, or the birth of a first child, men may migrate in order to earn income to establish and support an independent household, either in their country of origin or abroad (Koç and Onan, 2004; Lindstrom and Saucedo, 2007). Women married to migrants experience lower coital frequency and, therefore, are less exposed to the risk of pregnancy within the marital union, resulting in fewer children born compared to non-migrant women. As wives of migrants appear similar to non-migrants on traditional marriage scores, patriarchal attitudes and education, exposure to marriage emerges as a plausible explanation for fertility differences between these groups.

Women living in a household with a migrant (other than her spouse), our third category of migration exposure resemble women in non-migrant households more closely than women migrants and migrant wives. Neither bivariate nor multivariate models detected a significant effect of living in a migrant household on the number of children born. These results question the existing literature, which reports women in migration households occupy a socio-cultural position between women with more direct exposure to migration and women in non-migrant households (Kadioğlu, 1994; Day and İçduygu, 1997; 1998). Our findings, indicating no difference, may reflect our indirect approach to measuring migration exposure with a data set focused on issues of fertility and reproductive health. They may also be influenced by the substantial social changes taking place in Turkey, such as the growth in educational attainment and urban residence, and improvements in women's status. In interpreting the results, it is important to keep in mind that the effect of these overarching social changes may crowd out more modest influences on changing fertility patterns, such as residence in a migrant household (Day and İçduygu, 1998; Koç and Özdemir, 2004; D'Addato et al., 2007).

The analyses presented here employ CEB to measure fertility differences, although the richly detailed fertility information found in the 2003 TDHS provides ample possibilities for future research. While we use CEB as a proxy by which to assess the effect of migration on

completed fertility, the measure does not completely capture the way in which migration affects fertility decisions regarding when to start, space or limit childbearing. As a fertility indicator CEB does provide the best means by which to assess differences across categories of migration exposure relative to other measures such as total fertility rates or recent birth probabilities, which are subject to the influence of temporary absences associated with migration, or women's use of limiting contraceptive methods that would further restrict our sample. In future studies, the in-depth fertility histories serving as a core of DHS studies, might afford valuable opportunities for integration with detailed migration data.

Our findings are somewhat limited by the nature and orientation of the 2003 TDHS, which does not include a substantial focus on issues of migration, such as details concerning timing, duration or destination. Using the modest, but valuable, information available, we created three specific categories of migration exposure, resulting in relatively small sample sizes. It is possible that we may have been able to detect stronger effects of migration exposure on fertility with a larger sample of women exposed to migration, more information regarding the nature of migration (specifically longitudinal data), and a concerted sampling focus on migrant sending regions. Given the data limitations, we can not entirely determine whether our measures represent pre-migration selectivity and post-migration attitudinal effects. It is possible that return female migrants held more egalitarian attitudes about gender roles prior to migration, or that a portion of migrants obtained higher levels of education while abroad. Similar limitations stemming from the cross-sectional nature of the data are evident in the consideration of traditional marriage patterns, which may not always indicate selection but rather a strategy used by migrant households to enhance migration-related social networks. These limitations point to possibilities for including more specific migration measures in the DHS to better determine associations between the effect of migration on fertility (Bilsborrow, 2008).

Conclusion

In these analyses, our assessment of the relationship between migration and fertility displays an innovative use of a rich fertility dataset to measure migration and adds to our understanding of the importance of variation across the category of “migrant.” Additionally this research highlights the ability of migrant selectivity to account for fertility differentials and examines potential pathways for attitudinal and behavior changes linked to migration to influence fertility. Using data from a combination of household roster and individuals reports, we constructed a three-tiered measure of women’s exposure to international migration. By employing this measure, we found that the effect of migration on fertility was strongest for return female migrants followed by wives of migrants. The effect of migration on fertility for both groups was largely explained by selection characteristics, such as education and urban residence. Excluding potential selectivity effects, we find that positive indicators of women’s status and employment are significant but fail to account for the effect on fertility of being a migrant or migrant spouse.

Our results do not completely explain how exposure to international migration affects fertility, but we do raise several important issues concerning how we measure migration, migrant status and model the effects of migration on fertility. Our findings support the inclusion of more detailed migration information in fertility surveys, particularly those conducted in high migration areas. Future research, incorporating individuals or cohort experiences or including qualitative research investigating migration-related selectivity and behavioral change can build upon these preliminary findings and enhance our understanding of the ways in which migration influences fertility and fertility decision-making in sending areas.

Footnotes

1. Unlike previous waves of the TDHS and other DHS examination surveys, the 2003 TDHS only surveyed ever-married women.

2. While negative binomial regression models are also used for count data and may be more suitable than a Poisson model as they are less restrictive and address over-dispersion in the data (Long, 1997), we did not find that a negative binomial model provided a significantly better fit to our data than the Poisson model.

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Table 1. Comparisons of maximum and restricted measures of international migration by region of residence in the 2003 Turkish Demographic and Health Survey

Percent of individual migrants by region		
	Maximum Measure	Restricted Measure
Istanbul	23.8	--
West Marmara	3.3	4.3
Aegean	12.1	14.6
East Marmara	11.3	16.1
West Anatolia	10.7	15.1
Mediterranean	12.1	17.2
Central Anatolia	5.9	8.4
West Black Sea	5.8	7.3
East Black Sea	2.5	3.5
Northeast Anatolia	4.6	5.8
Central-east Anatolia	2.4	2.5
Southeast Anatolia	5.5	5.3
Total	100.0	100.0

Source: Turkish Demographic and Health Survey, 2003

Table 2. Characteristics of ever-married reproductive aged women by exposure to international migration

	Women living in non-migrant households		Women living in migrant households	
	(n=5,417) %	Household member is a migrant (n=210) %	Husband is a migrant (n=172) %	Woman is a migrant (n=128) %
Age group, years ^{†††}				
15 – 19	2.7	5.0	3.6	0.0
20 – 29	29.9	29.1	46.6	36.0
30 – 39	37.2	29.3	29.7	36.1
40 – 49	30.2	36.6	20.1	28.0
Duration of first marriage, years ^{†††}				
0 – 4	15.8	20.3	30.0	17.1
5 – 9	17.6	15.9	27.2	22.2
10 – 14	18.4	13.7	10.5	12.7
15 – 19	16.7	11.9	10.7	23.0
20 - 24	15.0	16.2	6.8	11.7
25 or more	16.3	22.0	14.7	13.2
Education ^{#,***}				
None	15.3	26.4	11.1	2.4
Primary	58.2	50.8	60.7	23.3
Secondary or more	26.4	22.8	28.2	74.3
Rural residence ^{#,***}	34.3	23.7	42.1	9.8
Currently employed	27.7	24.4	22.0	33.9

Table 2 (continued)

	mean (se)	mean (se)
Traditional marriage score ^{‡‡‡} (range: 0 – 4)	1.53 (0.02)	1.43 (0.08) 0.95 (0.11)
Patriarchal attitudes score ^{***} (range: 0 – 4)	1.31 (0.03)	1.29 (0.10) 0.75 (0.12)
Children ever born ^{†††‡‡‡} (range: 0 – 17)	2.68 (0.04)	2.80 (0.15) 2.04 (0.14)

Source: Turkish Demographic and Health Survey, 2003

se – standard error

‡Women in households where another household member is a migrant significantly different than women in non-migrant households: ‡p<0.05, ‡‡p<0.01, ‡‡‡p<0.001

† Women whose husband is a migrant significantly different than women in non-migrant households: †p<0.05, ††p<0.01, †††p<0.001

*Women who were migrants significantly different than women in non-migrant households: *p<0.05, **p<0.01, ***p<0.001

Table 3. Unadjusted and adjusted Poisson regression models for the number of children born to ever-married women

	Unadjusted Model		Multivariate Model 1		Multivariate Model 2		Multivariate Model 3	
	IRR	(95% CI)	IRR	(95% CI)	IRR	(95% CI)	IRR	(95% CI)
International Migration Exposure								
Woman in non-migrant household	1.00		1.00		1.00		1.00	
Woman was a migrant	0.76	(0.66, 0.88)***	0.79	(0.70, 0.89)***	1.00	(0.90, 1.11)	0.83	(0.74, 0.93)**
Husband was/is a migrant	0.72	(0.66, 0.85)***	0.90	(0.82, 0.99)*	0.93	(0.84, 1.02)	0.89	(0.82, 0.98)*
Resident in migrant household	1.05	(0.94, 1.17)	1.04	(0.95, 1.15)	0.98	(0.90, 1.07)	1.05	(0.95, 1.15)
Duration of first marriage, years								
0 – 4	--	--	1.00		1.00		1.00	
5 – 9	--	--	2.31	(2.17, 2.46)***	2.24	(2.10, 2.40)***	2.31	(2.17, 2.47)***
10 – 14	--	--	3.26	(3.04, 3.49)***	3.08	(2.87, 3.30)***	3.26	(3.05, 3.48)***
15 – 19	--	--	3.83	(3.56, 4.12)***	3.49	(3.25, 3.75)***	3.77	(3.50, 4.05)***
20 – 24	--	--	4.28	(3.98, 4.60)***	3.80	(3.54, 4.09)***	4.20	(3.92, 4.51)***
25 or more	--	--	5.36	(5.02, 5.73)***	4.33	(4.04, 4.64)***	5.19	(4.85, 5.56)***
Education								
None	--	--	--	--	1.00		--	--
Primary	--	--	--	--	0.73	(0.69, 0.76)***	--	--
Secondary or more	--	--	--	--	0.62	(0.58, 0.65)***	--	--
Rural residence								
	--	--	--	--	1.11	(1.07, 1.15)***	--	--
Traditional marriage score								
	--	--	--	--	1.14	(1.12, 1.16)***	--	--
Currently employed								
	--	--	--	--	--	--	0.94	(0.90, 0.99)*
Patriarchal attitudes score								
	--	--	--	--	--	--	1.09	(1.08, 1.11)***
Pseudo R²	0.002		0.134		0.178		0.144	

Source: Turkish Demographic and Health Survey, 2003

IRR – incidence rate ratio
 -- not included in model

*p<0.05, **p<0.01, ***p<0.001

