WHY DOES MIGRATION DECREASE FERTILITY?
A MULTICOUNTRY ANALYSIS[a]

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NOTE TO THE SESSION ORGANIZER: THIS IS AN INCOMPLETE DRAFT OF THE PAPER, SUBMITTED IN LIEU OF AN EXTENDED ABSTRACT. IT INCLUDES FIGURES AND TABLES AND IS INTENDED TO DEMONSTRATE THAT THE EMPIRICAL WORK IS DONE, AND THE PAPER IS *ALMOST* COMPLETE. I WILL REPLACE IT WITH A COMPLETE DRAFT IF POSSIBLE, BEFORE THE SUBMISSION DEADLINE.

Abstract:

Jensen and Ahlburg (2003) found that female migration to urban areas *per se* had little effect on fertility in the Philippines, but that post-migration employment greatly decreased fertility even if the move was between equally urbanized areas. They interpret this as evidence in support of the notion that while migrant women to more urban areas may adopt lower fertility norms, employment-induced increases in the opportunity cost of childbearing are the dominant determinants of observed post rural-urban migration declines in fertility. Filipinas are well-educated and famously mobile, calling the generality of this finding into question. In the present paper, we examine migrants in a broader set of countries, and again find that the fertility of migrants to urban areas typically is no lower than the fertility displayed by those who migrate between equally urbanized areas. Postmigratory employment is associated with lower subsequent fertility in Latin America, regardless of whether the destination is more urban than the migrant's place of origin, although the relationship is statistically significant only in the larger samples. In our Middle Eastern data, the level of female employment is low and postmigratory employment does not affect subsequent fertility, suggesting the importance of the status of women in the causal mechanism we posit.

Introduction

A stylized view of the fertility-reducing impact of migration on fertility encompasses the following points: migrants flow into urban areas from less urbanized areas; urban fertility is less than fertility in sending areas; and migrants to urban areas display lower 'urban' fertility sometime soon after their arrival. Migration-fueled urbanization is therefore a potential engine of fertility reduction. The engine driving the fertility decline often is posited (*e.g.* XXXX) to be normative change. In this view, adaptation to conditions changed by migration occurs as the fertility norms of migrants adapt to the new, more urbanized setting.

A competing explanation for post-migration reductions in fertility is that much voluntary migration is economically motivated. Issues of unemployment at the destination are real (Todaro 19XX), but migrants move and stay on in expectation of higher earnings. If a migrant mother obtains a job with higher earnings than she previously had, this increases the opportunity cost of childbearing (Becker 1962) and, all else constant, reduces fertility. The two explanations of the impact of migration on fertility would be very difficult to disentangle if all migration were to more urbanized areas, because these areas presumably share low fertility norms and good wage prospects. However, most internal migration in developing countries is between equally urbanized places. Classifying areas as large cities, towns, and rural areas, the Demographic and Health Surveys (DHS) data that we employ in this paper show moves between equally urbanized areas to be two to three times more common than moves to more urbanized areas. Moreover, the DHS surveys we employ allow us to identify post-migration employment. We therefore can separate the effects of migration (by origin and destination) and employment, and perform simple, direct tests of the competing behavioral models. Under the assumption that more urbanized places display lower fertility norms, the normative adaptation hypothesis implies unequal fertility impacts between destinations of varying urbanization, controlling for employment, migrant selectivity, and background. If post-migration employment entails higher opportunity cost of fertility, the opportunity cost hypothesis implies differential fertility displayed by migrants of varying post-migration employment experiences, controlling for destination, migrant selectivity, and background. To implement these tests, we develop a survival model of birth intervals and estimate it using DHS data sets from Latin America (Colombia, Paraguay, and Peru) and the Middle East (Egypt and Morocco). We present our results together with those of Jensen and Ahlburg (2003) for the Philippines, and attempt to draw general conclusions on the importance of opportunity cost in post-migration fertility reductions.

1. Normative adaptation and opportunity costs

We have thus far mentioned two competing paths through which adaptation may change fertility. However, a negative association between fertility and migration may exist because of selectivity or disruption, in addition to adaptation. Selectivity implies that migrants are different from nonmigrants in a number of ways, both observable (for example, education and age) and nonobservable (for example, motivation), that lead migrants to have lower fertility than nonmigrants. As we subsequently discuss in more detail, selectivity is a potentially important statistical issue, but its resolution is not particularly difficult.

Disruption associated with migration can cause lower fertility through the physical separation of spouses (Goldstein and Tirasawat 1977, Kiningham *et al.* 1996, Harrison *et al.* 1986). Disruption also can increase fertility by causing an interruption in the supply of contraceptives or by the weakening of controls on sexual behavior (Moreno 1994, Bloom and Mahal 1995, Lansdale and Havan 1996; Ahlburg and Jensen 1997). Disruption presumably depends on physical distance but not on the type of move *per se*. If so, we will argue that the large number of moves we observe from more urbanized origins to less urbanized destinations provide us with information on the potential fertility effects of migration-induced disruption, because these are moves where migrant selectivity and adaptation presumably play minor roles.

Adaptation generally is taken to imply that since average fertility at the destination is lower than average fertility at the origin, migration may reduce fertility. Typically, in the demographic literature, an important mechanism is the adoption of prevailing lower-fertility norms. From an economic perspective, however, adaptation may come from a change in demand for children generated by changes in prices (woman's wage, cost of childcare, costs of fertility regulation) and changes in income (Easterlin and Crimmins 1985; Rosenzweig and Schultz 1985). If migrants from rural to urban areas subsequently display lower fertility, this is consistent with either a norms-based explanation, in which fertility declines because migrants conform to prevailing behaviors at the destination, or an economic explanation, in which fertility declines as the opportunity cost of children rises. In the absence of specific information on post-migration employment, or where most moves are to more urbanized areas, it is difficult to distinguish empirically between these alternative explanations. By examining the fertility impact of moves between areas with dissimilar average fertility levels (and so presumably dissimilar fertility norms), and by distinguishing employed migrants from other migrants, we attempt to distinguish between the norms and opportunity cost models of fertility adaptation.

We note here that a relatively small proportion of migrants subsequently are employed in any of the surveys we employ. Simple averages like urban total fertility rates may fall because every arrival emulates, to some degree, somewhat lower urban fertility norms; or because a small number of employed arrivals display large fertility reductions, while those unemployed or not in the labor force show little change in fertility. While the normative model allows for variation between women in individual fertility preferences, there is an implicit notion of diffusion over a large proportion of migrants of fertility norms that are lower than pre-migration norms. Conversely, where the proportion of female migrants subsequently employed is small, as typically is the case in our data, fertility behavior is markedly heterogeneous. A large proportion of migrants behave much as they did before they migrated, but the small proportion of women who take jobs display much lower fertility than they previously had done.

Although a large number of empirical studies of developing nations have found evidence of a negative association between fertility and migration, this finding has not been universal (see Lee 1989). Lee (1989: 1599) discusses several reasons that have been put forth to explain differences in the findings among studies: different study designs, different operationalization of key concepts, and failure to control for selectivity. Selectivity criticisms of analyses of migration impacts center on the failure to control for the differences that helped make some individuals migrants in the first place. We will examine this contention in some detail in the next section.

Some studies, notably Goldstein and Goldstein (1983), and Lee and Pol (1993), attempt to identify separately each of the three explanations (selectivity, disruption, and adaptation) and find support for each. In two related studies, Moreno (1994) attempted to identify each of these effects of migration on contraceptive use in Brazil; and White, Moreno, and Guo (1995) these effects on fertility in Peru. Contraceptive use is one of several channels through which migration could affect fertility. Moreno found some association between migration and contraceptive use, but the relationship was not strong. White, Moreno, and Guo found some evidence for selectivity and modest support for disruption and adaptation. White, Moreno, and Guo (1995) were able to exploit the longitudinal nature of the retrospective calendar to estimate a hazard model of birth interval duration, which employed residence type and 'recent' migration as predetermined variables. Recent migration had a large, negative, but statistically insignificant coefficient. migration was limited to the the immediate pre-survey period in order to estimate the impact of disruption on fertility. These findings therefore may not bear directly on the question of adaptation, as adaptation is typically viewed as affecting family size and timing over the reproductive lifetime.

A parallel literature exists on the effect of migration on fertility for migration to developed countries. Much of this research focuses on the US and has found evidence of temporary disruption followed by rising fertility (Jasso and Rosenzweig 1990; Blau 1992).Overall, disruption dominated assimilation. In contrast, recent studies in Europe on completed fertility favor the assimilation model of fertility adjustment (Schoorl 1990; Mayer and Riphahn 1999). It is not clear why the US and European experience differs.

2: Model and Methods

Conditional estimation of the impact of migration on fertility

The literature supports, to some extent, the notion that migration causes fertility to fall through some form of adaptation. With the exception of Jensen and Ahlburg (2003), we have found no examination of the importance of competing models of adaptation, notably the sociological normative adjustment model versus the new home economic model. We employ the Jensen and Ahlburg framework to assess the importance of the two models. We will compare instances in which norms may be reasonably presumed constant, pre- and post-migration, to others in which the same can be said about opportunity costs, and examine the relative importance of the two effects. Before proceeding to the model, we first return to the notion that migrant selectivity requires that fertility and migration must be estimated simultaneously (or alternatively, that one can estimate the unconditional effect of migration on fertility, rather than conditioning on prior migration). On this topic, we have two points to make. Firstly, estimators conditioned upon past migration are sufficient for our purposes. Secondly, unconditional estimators, while also consistent, require strong enough identification assumptions that they are of limited usefulness at best. We take up each of these concerns in turn.

The goal in employing an unconditional estimator is to allow the estimation of structural parameters that allow for the joint impact of multiple processes on outcomes. This is as familiar problem in many contexts. Consider, for example, the basic Heckman (1979) model of wages and labor force participation. An exogenous increase in the demand for labor causes wages of current workers to increase, and also causes wages of new entrants to increase from zero. An unconditional estimate of the net impact on wages of the demand shift must reflect both of these effects, a fact that forms the basis of the selectivity bias literature. Estimation of the impact on wages of employed women (only) of an increase in demand, conditional on continuous participation in the labor market, would simply be the regression of wages on the relevant covariates, and is straightforward to obtain. However, this conditional estimate often is not of central interest in the labor market example.

In contrast, the case for the usefulness of conditional estimators in the present context is strong. Most discussions of the impact of migration on fertility, whether it occurs through new home economic adjustment to wage changes or normative adaptation, contain an implicit timing element. Migration occurs, and then fertility outcomes obtain. Moreover, as we have alluded to already, much of the migration decision is masked for nonmigrants. These individuals made the same sort of calculations that migrants did, but, because they chose not to migrate, we do not observe much about them. Therefore, an unconditional estimate of the joint effects of migration and fertility is empirically difficult to obtain (at best).

A key insight was made on this point by Sjaastad (1962). Sjaastad realized that psychic costs were a major component of migration, and that psychic costs were by their nature unobservable. However, all migrants have proved themselves willing to bear this cost, and so confining his attention to migrants allowed Sjaastad to focus on other, more measurable costs. In so doing, he showed that key variables of interest could be studied from a comparison of migrant origins and destinations, conditional on observed migration. We follow this general framework in obtaining conditional estimates of the impact of various types of migration on the fertility of migrants. It is important to note that, as a result, we are *not* able to make statements about joint fertility-migration choices. We are able to make conditional statements about our central concern, which is the impact of past migration choices on fertility. We cannot test directly for the importance of migrant selectivity in a conditional framework; however, we control for its potential impact by including only migrants (presumably self-selected) into our analysis. Moreover, a simple Hausman test for the importance of selectivity can be constructed by comparing the results from the conditional model with an identical model estimated on the full sample of migrants and nonmigrants. The probability limit of the conditional parameter estimators is the true (conditional) value, while the probability limit of the same model differs from this value, if conditioning matters. Therefore, differences in coefficients between samples is evidence of inconsistency in the full-sample parameter estimates resulting from failing to condition on migrant selectivity, and so a rejection of the Hausman test would constitute evidence of migrant selectivity in fertility.

The second concern we have with estimating a simultaneous model of migration and fertility is pragmatic. Such a model is appealing, carrying with it the same desirable asymptotic properties that the conditional model does, but with a wider range of parameters potentially available. The empirical difficulties in identifying such a model are formidable, requiring either exclusionary or distributional assumptions to resolve them. Exclusionary restrictions, familiar in a simultaneous linear equations context, involve specifying structural equations for fertility and migration that each exclude a sufficient number of predetermined variables to allow for a unique solution for the estimators. Among the variables typically affecting migration available in a Demographic and Health Survey (or similar data set), only moving cost can reasonably be excluded from a structural equation for fertility. Unfortunately, because it is contingent on distance from origin to destination, this cost is only available for those who actually migrated, and the unconditional model requires us to incorporate information for nonmigrants. Credible exclusions of fertility determinants from structural migration equations are equally difficult to find. For example, contraceptive costs (in money and time) theoretically affect fertility, but probably not migration, directly. However, they often are reflective of social infrastructure (in fact are often the only such indicator in common surveys such as Demographic and Health Surveys), and so in practice also are likely determinants of migration. Less clearly theoretically relevant instruments may exist, but the cautionary tone of the literature on weak instruments (*e.g.*, Bound, Jaeger and Baker 1995) is instructive here.

Lillard (1993), Lillard, Waite and Brien (1995), Upchurch, Lillard and Panis (2002), Steele and Curtis (2003) and others have pursued an alternative identification path based on distributional assumptions[1]. While a full discussion of these models is precluded here, we note that these assumptions are strong and not without controversy (Heckman and Singer 1979a, 1979b). If the duration since arrival were of concern, the restrictiveness of the models might be more acceptable. It is not clear that duration of stay, after some presumably brief initial period, is of concern in either the normative or opportunity cost models.

Theoretical model

Let 'child services', that is, the product of the quantity n and quality q of children, be represented by C, and all other utility be provided by a composite good Z. The underlying theoretical model is as follows:

$$(1) \quad U = U(C, Z) = U(nq, Z)$$

$$(2a) \quad n = n(t_{n,K} \ , X_n)$$

$$(2b) \quad q = q(t_{q,K} \ , X_q)$$

$$(3a) \quad t_{n,K} \ = r(w_K, Y_K)$$

$$(3b) \quad t_{q,K} \ = s(w_K, Y_K)$$

We assume that number and quality of children in a family are increasing functions of time t and other commodities X devoted to their production. Furthermore, we assume that times spent on producing n and q decrease as wages in location K increase. Therefore, migration from K to some other location L will have a fertility effect contingent upon the wage differential. For $w_L > w_K$, migration will cause time contributions to the production of both number and quality of children to decrease, all else constant. Purchased inputs are likely to increase as a result of higher incomes, especially quality-enhancing inputs, potentially concentrating the effect of increasing wages in decreasing numbers of children. We will interpret results showing post-migration fertility responsiveness to higher wages as supportive of a new home economic framework. If post-migration fertility is lower than pre-migration fertility without evidence of wage change, we will interpret this finding as supportive of the less specific sociological model of normative adaptation where fertility norms can reasonably be assumed lower at the destination than the origin.

The empirical model of conception hazard, conditional on migration, is a standard hazard rate:

$$(4) \quad h_{ij}(t \mid M) \quad = \lim_{\delta t \to 0} \frac{P(t \le T \le t + \delta t \mid T \ge t, M_k)}{\delta t}.$$

Adding covariates yields

$$(5) \quad h_{ij}(t \mid x, w, M) \quad = \quad g(t, x_i\beta, w_{ij}\gamma, M_{ijk}\pi)$$

where h_{ij} represents the hazard of conception to woman *i* in interval *j*, conditional on having made migration M of type *k*. The function g(.) represents a generic hazard function, which we will assume is Weibull[4] in our empirical work. Some variables (*x*) are fixed for women over multiple conceptions, and others (*w*) vary between conceptions. Migration also may vary from conception to conception, and M_{ijk} denotes that migration of type *k* was the last migration occurring prior to observing woman *i* in conception interval *j*. Migration types may include the direction of migration (to a more, less or equally urbanized destination) as well as the purpose of migration (migration that is followed by employment in the month of, or month after, arrival). Coefficient vectors β, γ, π and the Weibull shape parameter are to be estimated. Note that while we have argued that we do not require the specification of frailty to estimate a simultaneous model, the likely presence of unobserved heterogeneity in durations implies that our omission of it will bias our results toward negative duration dependence (Heckman and Singer 1984).

Intuitively, this is because those most ‘frail’ (in our case those most prone to conceive for unobserved biological, behavioral or other reasons) contribute short intervals, on average, to the analysis.[5]

Section 3: Data

The Demographic and Health Surveys have been fielded in several waves. In the second wave, beginning around 1990, a retrospective calendar was added for high contraceptive prevalence countries. Women were asked to fill out a month-by-month history for a period of between 60 and 66 months preceding the survey. Every survey contained questions about fertility, contraceptive usage, and certain other variables. Some survey had calendars where questions about migration were added. In these cases, women recorded whether they lived in a ‘village’, ‘town’, or ‘large city’. Definitions of each type of place varied from survey to survey, but were consistent within countries. They also were asked where and when they moved for the move prior to the start of the calendar, or where they were born if they did not report moves. A small subset of these countries also collected an employment history in the calendar. Women were categorized as working out of the home or in the home, for pay or not, each month of the survey. In these countries, it is possible to identify post-migration employment. Seven surveys, all from the early 1990s, contained these data. They were Northeast Brazil, Colombia, Egypt, Morocco, Paraguay, Peru and the Philippines. Of these, we excluded Northeast Brazil because of its regional nature. Domestic migrants to, say, Rio de Janeiro are lost to this survey, rendering it of little use in testing either model.

In constructing the data sets, we excluded unmarried women from our analysis. We also excluded sterilized and nulliparous women. Pregnancy histories allowed us to retrieve the starting date of intervals that were in progress at the start of the calendar. We used all birth intervals after the first birth for which the subsequent interval extended into the calendar period, beginning them at the month of previous birth and extending them until the next calculated conception date, or until censored by the survey. The data are restructured to make birth intervals the unit of analysis, and the statistical models we employ include controls for potential multiple birth intervals experienced by some mothers over the course of the calendar.

Our final samples consisted of between 3032 and 11,779 birth intervals, typically contributed by about three-fourths as many women. Of all intervals, typically one-fourth ended with a birth, and the rest were censored. Migrant subsamples ranged from roughly one-third to one-half the size of the full sample. For each survey, we generated a variable summarizing asset ownership or permanent income. The wealth variable is a factor score based on ownership of the durable goods stove, refrigerator, television, bicycle, motorcycle, and automobile. Its mean is near zero and standard deviation near unity, by construction.

Descriptive statistics for the six countries we employ in our analysis are presented in Table 1. For each country, we present separately (unweighted) means for the full estimation samples and for the estimation samples of migrants alone. Comparing columns within countries shows strong similarities between migrants and their source populations, and so little *prima facie* evidence for migrant selectivity. Comparing between countries shows some similarities and some differences. Colombians seem most mobile and Paraguayans least so, but roughly one-third to one-half of the population have at least one observed migration in every country. Female education levels differ markedly, with over half of Filipino women (and nearly half of Colombian and Peruvian respondents) having completed secondary school, but only about one fourth of Egyptian and Paraguayan, and less than seven percent of Moroccan women having done so.

(Table 1 here)

Comparing the 'migrants' column between countries, there are two distinct migration patterns evident. In Colombia, Egypt, Peru, and the Philippines, the most common move is between equally urbanized areas, with 50% of moves in Egypt and 60% or more of moves in the other three countries being of this type. Moves to less urban places, which are calculated by subtracting the proportions of moves between equally urbanized places and from less to more urbanized places from unity, are roughly as common as moves to more urbanized places. In Morocco and Paraguay, on the other hand, the most prevalent move is from a more urbanized to a less urbanized place. In the Todaro (19XX) model, migrant flows in this direction are failed urban migrants, returning home. While our data do not allow us to examine the contention that these are return migrants directly, the relative prevalence of this sort of move may say something about economic conditions in these countries at the time of the surveys. In any case, there is clearly some heterogeneity in these data.

Table 2 presents data on the proportion of female migrants who reported working within four months of their arrival, separately for migrants to more urban and equally urban destinations.[4] The differences there are striking. In Morocco and Paraguay, women who have migrated between equally urbanized areas are more likely to work than are women who have moved to more urbanized areas. In the other countries, this situation is reversed. We qualify this, however, by noting that in Egypt, while a female migrant to more urban areas is twice as

[4] For most women, the true period was less than four months, as it included the month in which they arrived plus the

likely to work as one to equally urban areas, fewer that one in one hundred Egyptian female migrants actually do get jobs after they migrate to urban areas. Figure 1 shows a similar pattern, plotting overall migration probabilities for full samples (including nonmigrants) and post-migration employment. Substantially less than 20% of any sample reported migrating to more urban areas, while migration between similarly urbanized areas was comparatively much more common. Post-migration employment patterns vary from survey to survey, with urban migration associated with relatively high proportions of subsequently employed women in Latin America, and with almost no subsequent employment in the Middle East.

(Table 2 and Figure 1 here)

Section 4: Empirical Results

In our survival regressions, we have included four key variables of interest. These are dummy variables for whether a woman has reported past migration to more urbanized or equally urbanized areas, and in each case whether she was employed within the fourth month of arrival. We use the employment dummies to examine the importance of opportunity costs and the location dummies to assess the importance of normative adaptation, where the latter relies on the assumption that fertility norms are lower in more urbanized places. We control for mother's ages at the conception that defines the start of the interval and at current marriage. We also control for education, with dummies for whether each spouse attended or completed secondary and post-secondary school, and for wealth. We present the results of the survival regressions as time ratios rather than raw coefficients. A variable's time ratio is interpreted as the ratio of projected survival time with a unit increase in the variable divided by the projected survival time

following three months. Our results are robust to variations in the length of this interval.

at the mean value of the variable, all else constant. A time ratio of unity is equivalent to a raw coefficient of zero. Full results are presented in the appendix.

In Tables 2 and 3, we present summary results of survival regressions of durations of intervals following a birth and either censored or ending in conception. Full results for the underlying regressions are presented in the Appendix. Table 2 shows conditional results for ever-migrants. We present time ratios and probability values for testing the hypothesis that the time ratio equals 1 against a two-tailed alternative in parentheses. So for example the first column of results in Table 2 shows that Colombian women who moved to more urban areas averaged conception intervals 120% as long as women in the excluded categories (those who did not migrate, or migrated to less urbanized areas), all else constant. The associated *p*-value of 0.15 implies a failure to reject the hypothesis that the time ratio differs from unity at typically used significance levels. However, in three cases, Egypt, Morocco and Paraguay, moving to more urban areas had a statistically significant lengthening effect on birth intervals at significance levels below .05, and the same effect appeared in the Philippines at a .06 level. Something about necessary but not sufficient for norms**************

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Endnotes

[1] See Lillard and Panis (2000) for a full description of the technique and its implementation.

[4] The key results are robust to a range of typical parameterizations and most reassuringly, to a semiparametric Cox specification.

[5] We do account for persistent woman-level differences by allowing for clustering at this level, which may slightly ameliorate this problem.

Figure 1: Migration and Employment

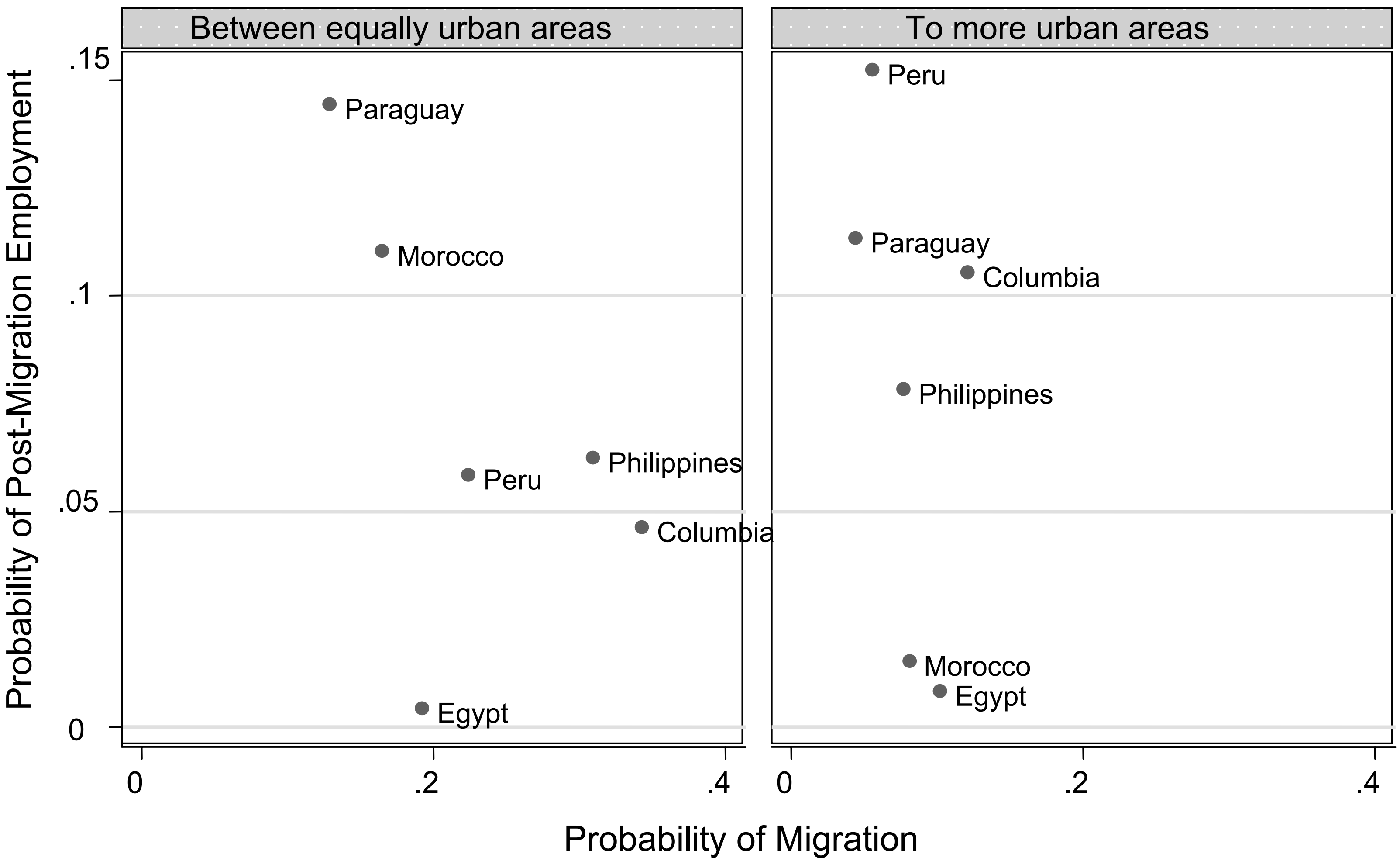

Figure 2a: Colombia

Predicted proportions of migrants not pregnant

Figure 2b: Egypt

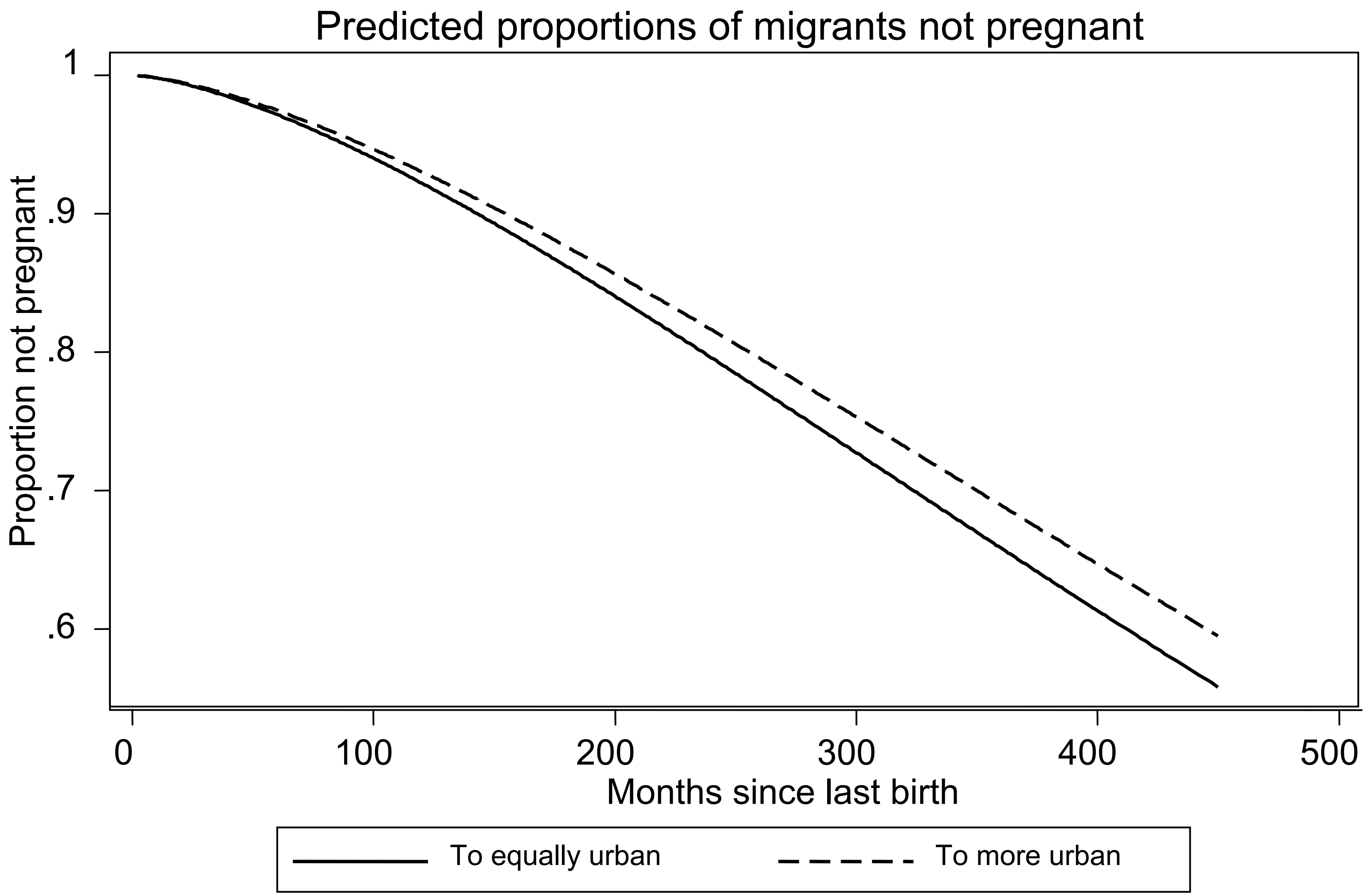

Figure 2c: Morocco

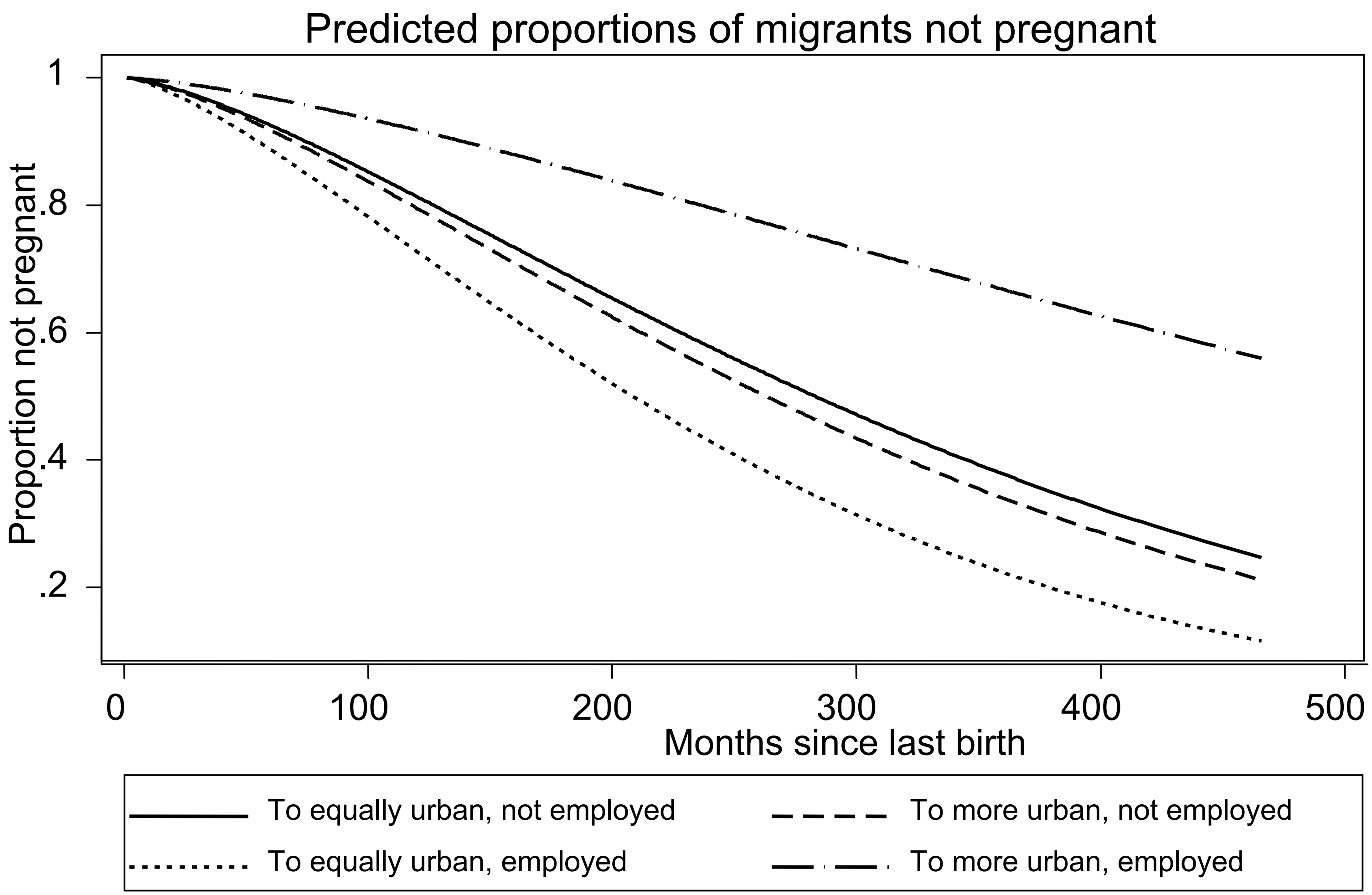

Figure 2d: Paraguay

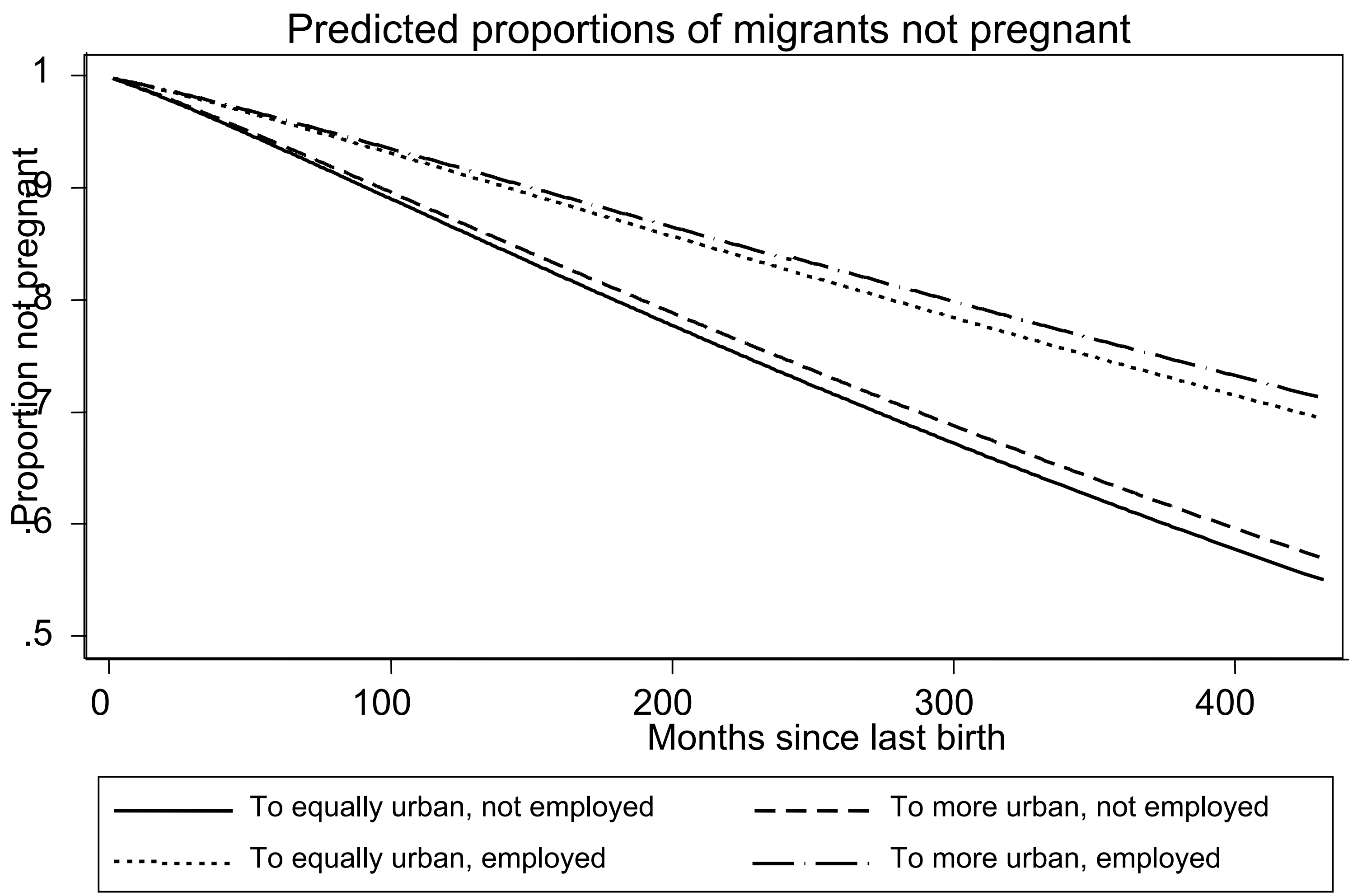

Figure 2e: Peru

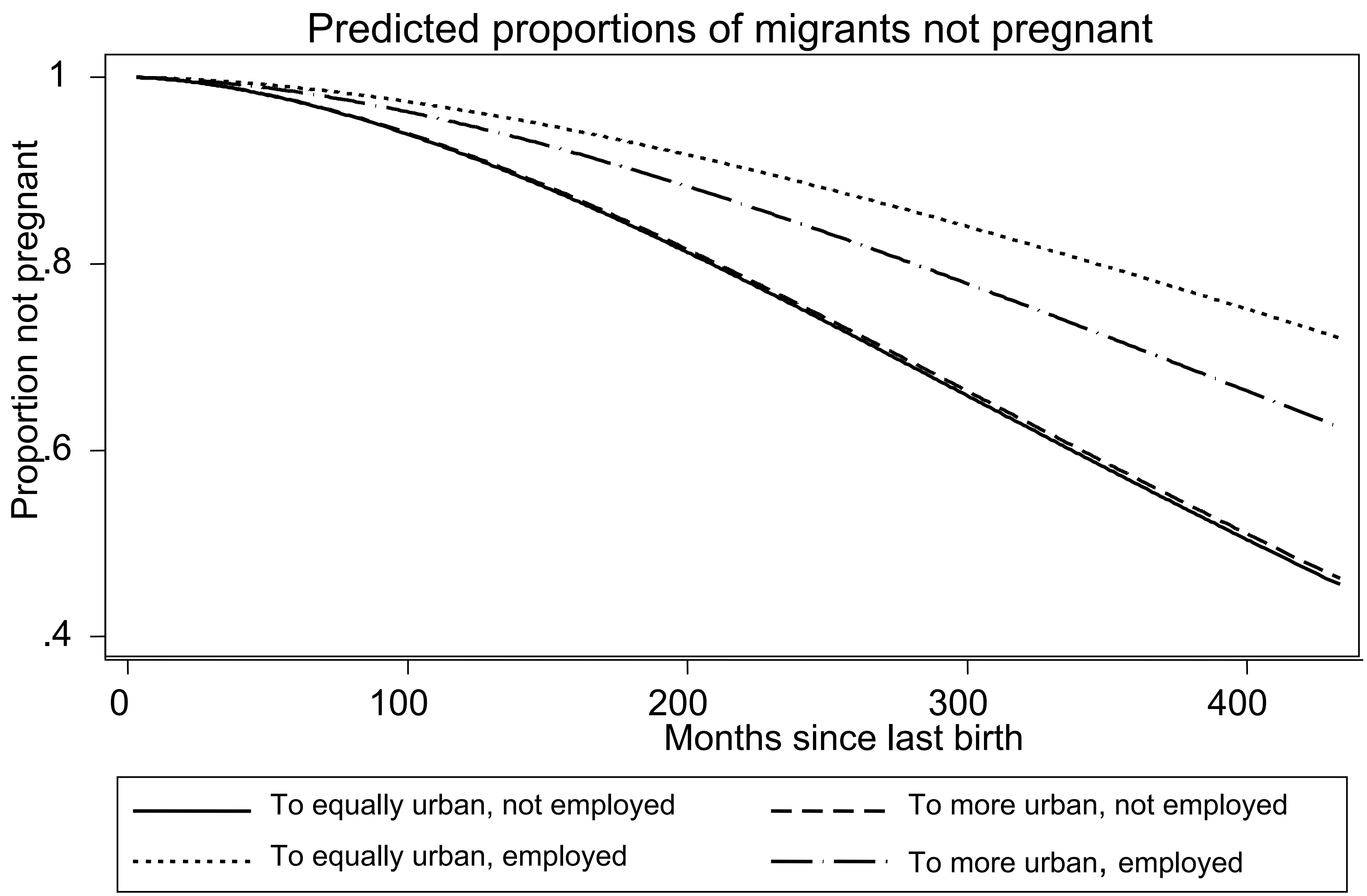

Figure 2f: Philippines

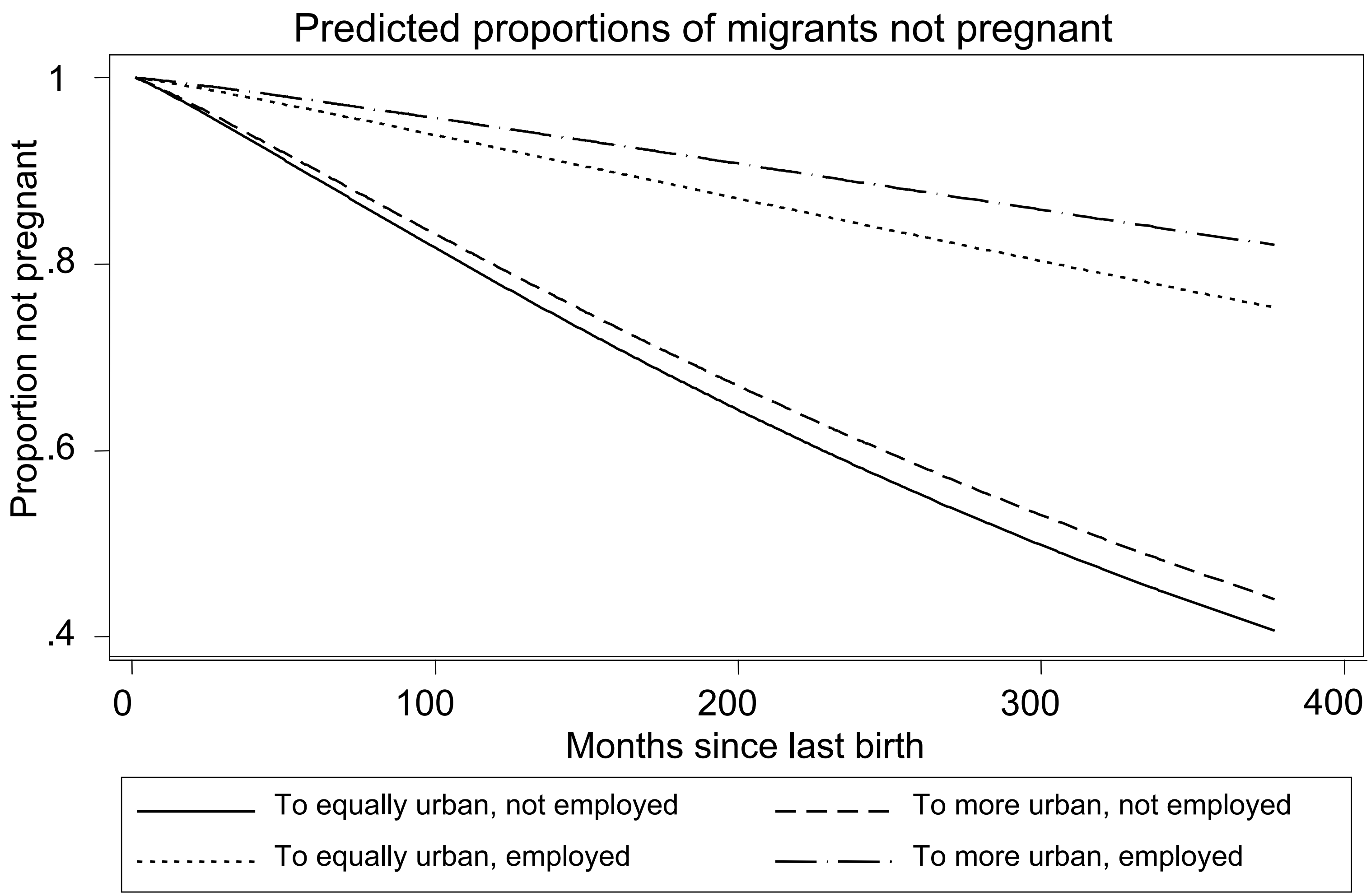

Table A1
Descriptive Statistics

	Brazil		**Colombia**		**Egypt**		**Morocco**		**Paraguay**		**Peru**		**Philippines**	
Variable name	Full sample	Migrants only	Full sample	Migrants only	Full sample	Migrants only	Full sample	Migrants only	Full sample	Migrants only	Full sample	Migrants only	Full sample	Migrants only
Mother's age at conception	33.51 (9.25)	35.52 (8.5)	33.67 (8.28)	35.05 (7.93)	33.80 (8.46)	35.10 (8.09)	33.66 (7.45)	34.27 (7.27)	33.5 (8.23)	34.3 (7.9)	32.70 (8.50)	34.46 (8.13)	34.02 (8.04)	35.03 (7.67)
Mother's age at marriage	19.79 (5.13)	20.34 (5.38)	19.93 (4.66)	19.93 (4.67)	18.26 (4.03)	18.67 (4.11)	18.27 (3.58)	18.12 (3.51)	19.68 (4.36)	19.75 (4.22)	19.50 (4.50)	20.41 (4.96)	20.31 (4.36)	20.36 (4.31)
Mother: attended secondary school	.069 (0.25)	0.09 (0.29)	0.42 (0.49)	0.40 (0.49)	0.17 (0.38)	0.20 (0.40)	0.057 (0.23)	0.05 (0.23)	0.17 (0.37)	0.19 (0.39)	0.30 (0.46)	0.29 (0.45)	0.31 (0.46)	0.33 (0.47)
Mother: attended post-secondary school	0.023 (0.15)	0.03 (0.17)	0.07 (0.25)	0.06 (0.23)	0.04 (0.18)	0.05 (0.21)	0.01 (0.08)	0.01 (0.08)	0.04 (0.19)	0.03 (0.18)	0.12 (0.32)	0.16 (0.36)	0.19 (0.40)	0.22 (0.41)
Father: attended secondary school	0.077 (0.27)	0.09 (0.29)	0.38 (0.49)	0.37 (0.48)	0.25 (0.43)	0.30 (0.46)	0.12 (0.32)	0.13 (0.33)	0.20 (0.40)	0.23 (0.42)	0.38 (0.48)	0.40 (0.49)	0.31 (0.46)	0.33 (0.47)
Father: attended post-secondary school	0.02 (0.15)	0.03 (0.17)	0.12 (0.32)	0.11 (0.31)	0.07 (0.26)	0.09 (0.29)	0.20 (0.14)	0.02 (0.14)	0.05 (0.21)	0.05 (0.21)	0.18 (0.38)	0.23 (0.42)	0.19 (0.39)	0.21 (0.41)
Wealth	-.020 (.84)	-0.05 (0.86)	-.0.03 (0.79)	0.02 (0.75)	0.17 (0.77)	0.21 (0.71)	-0.05 (0.76)	-0.00 (0.76)	-0.04 (0.85)	0.06 (0.85)	-0.09 (0.77)	0.09 (0.73)	0.95 (0.79)	-0.01 (0.83)
Move to more urban area	0.06 (0.24)	0.14 (0.35)	0.12 (0.33)	0.21 (0.41)	0.10 (0.30)	0.28 (0.45)	0.08 (0.27)	0.13 (0.33)	0.05 (0.35)	0.13 (0.33)	0.06 (0.23)	0.16 (0.37)	0.08 (0.27)	0.16 (0.37)
Move to equally urban area	0.17 (0.38)	0.41 (0.49)	0.34 (0.48)	0.59 (0.49)	0.19 (0.39)	0.52 (0.50)	0.17 (0.37)	0.26 (0.44)	0.13 (0.07)	0.36 (0.48)	0.22 (0.42)	0.64 (0.48)	0.31 (0.46)	0.65 (0.48)
Move to more urban area; subsequent employment	0.01 (0.10)	0.02 (0.15)	0.01 (0.11)	0.02 (0.15)	0.00 (0.29)	0.00 (0.48)	0.00 (0.03)	0.00 (0.04)	0.01 (0.07)	0.01 (0.12)	0.01 (0.09)	0.02 (0.15)	0.01 (0.08)	0.01 (0.11)
Move to equally urban area, subsequent employment	0.02 (0.14)	0.046 (0.21)	0.02 (0.12)	0.03 (0.16)	0.00 (0.28)	0.00 (0.45)	0.02 (0.13)	0.03 (0.16)	0.02 (0.14)	0.05 (0.22)	0.01 (0.11)	0.04 (0.19)	0.02 (0.14)	0.04 (0.20)
Sample size	1746	740	3032	1759	9188	3405	4142	2683	3104	1116	11779	4156	7123	3381

Notes to table: Table entries represent time ratios associated with unit changes in the associated variables. Standard deviations are in parentheses. The variable wealth represents a factor score based on a set of goods, varying by country, and typically includes electrical connections, ownership of car, radio, stove, bicycle, etc; mean value=0. Values are rounded to the nearest hundredth; values of 0.00 refer to values less than 0.01. Migration variables equal 1 if specified events occurred, 0 otherwise. "Subsequent" employment refers to working for pay within 4 months after migration.

Table A2
Survival Regression Results

BRAZIL				
Variable name	Full sample	Migrants Only	Full sample	Migrants Only
Mother's age at conception	1.00 (0.97)	1.05 (0.21)	1.00 (0.96)	1.05 (0.21)
Mother's age at conception^2	1.00 (0.02)	1.00 (0.00)	1.00 (0.02)	1.00 (0.00)
Mother's age at marriage	0.94 (0.00)	0.94 (0.00)	0.94 (0.00)	0.94 (0.00)
Mother: secondary school	0.91 (0.81)	1.17 (0.51)	0.92 (0.81)	1.17 (0.51)
Mother: tertiary school	0.77 (0.85)	0.66 (0.52)	0.76 (0.84)	0.66 (0.52)
Father: secondary school	3.24 (0.01)	2.11 (0.00)	3.25 (0.01)	2.11 (0.00)
Father: tertiary school	2.41 (0.53	1.44 (0.57)	2.42 (0.52)	1.44 (0.57)
Wealth	1.66 (0.00)	1.55 (0.00)	1.65 (0.00)	1.54 (0.00)
Move to more urban area	1.71 (0.10)	1.51 (0.14)	1.60 (0.11)	1.43 (0.16)
Move to equally urban area	1.26 (0.17)	1.16 (0.27)	1.27 (0.15)	1.17 (0.24)
Move to more urban area; subsequent employment	0.73 (0.65)	0.76 (0.67)		
Move to equally urban area, subsequent employment	1.07 (0.89)	1.04 (0.92)		
Weibull shape parameter (standard error)	1.06 (0.07)	1.15 (0.04)	1.06 (0.07)	1.1.5 (0.04)1
Hausman test statistic	5.21 (0.921)		5.14 (0.822)	

Notes to table: Table entries represent time ratios associated with unit changes in the associated variables. P-values are in parentheses.

COLOMBIA				
Variable name	Full Sample	Migrants Only	Full Sample	Migrants Only
Mother's age at conception	1.51 (0.00)	1.32 (0.00)	1.53 (0.00)	1.33 (0.00)
Mother's age at conception^2	0.997 (0.00)	1.00 (0.39)	1.00 (0.00)	1.00 (0.33)
Mother's age at marriage	0.90 (0.00)	0.90 (0.00)	0.90 (0.00)	0.90 (0.00)
Mother: secondary school	1.01 (0.91)	1.24 (0.01)	1.02 (0.83)	1.24 (0.01)
Mother: tertiary school	0.897 (0.71)	1.02 (0.90)	0.96 (0.88)	1.05 (0.79)
Father: secondary school	0.97 (0.78)	1.15 (0.08)	0.96 (0.75)	1.15 (0.08)
Father: tertiary school	1.29 (0.29)	1.20 (0.23)	1.29 (0.29)	1.20 (0.23)
Wealth	1.16 (0.06)	1.08 (0.12)	1.14 (0.08)	1.08 (0.15)
Move to more urban area	1.29 (0.10)	1.20 (0.15)	1.38 (0.03)	1.29 (0.05)
Move to equally urban area	1.26 (0.06)	1.15 (0.10)	1.29 (0.04)	1.18 (0.05)
Move to more urban area; subsequent employment	2.12 (0.16)	2.25 (0.14)		
Move to equally urban area, subsequent employment	1.96 (0.19)	2.16 (0.15)		
Weibull shape parameter (standard error)	1.43 (0.09)	1.37 (0.05)	1.43 (0.09)	1.37 (0.05)
Hausman test statistic	35.99 (0.00)		-168.73 (fails to meet asymptotic assumptions of test)	

Notes to table: Table entries represent time ratios associated with unit changes in the associated variables. P-values are in parentheses.

EGYPT		
Variable name	Full Sample	Migrants Only
Mother's age at conception	1.20 (0.00)	1.29 (0.00)
Mother's age at conception^2	1.00 (0.23)	1.00 (0.32)
Mother's age at marriage	0.90 (0.00)	0.89 (0.00)
Mother: secondary school	1.27 (0.00)	1.09 (0.23)
Mother: tertiary school	1.23 (0.09)	1.16 (0.42)
Father: secondary school	1.20 (0.00)	1.15 (0.01)
Father: tertiary school	1.08 (0.40)	1.12 (0.40)
Wealth	1.06 (0.01)	1.05 (0.25)
Move to more urban area	1.03 (0.50)	1.20 (0.01)
Move to equally urban area	0.95 (0.19)	1.12 (0.08)
Weibull shape parameter (standard error)	1.50 (0.05)	1.45 (0.03)
Hausman test statistic	57.10 (0.00)	

Notes to table: Table entries represent time ratios associated with unit changes in the associated variables. P-values are in parentheses.

MOROCCO				
Variable name	Full Sample	Migrants Only	Full Sample	Migrants Only
Mother's age at conception	1.16 (0.00)	1.14 (0.00)	1.16 (0.00)	1.14 (0.00)
Mother's age at conception^2	1.00 (0.48)	1.00 (0.19)	1.00 (0.47)	1.00 (0.19)
Mother's age at marriage	0.90 (0.00)	0.906 (0.896)	0.90 (0.00)	0.91 (0.00)
Mother: secondary school	1.02 (0.88)	1.04 (0.58)	1.04 (7.3)	1.06 (0.49)
Mother: tertiary school	0.80 (0.30)	0.65 (.004)	0.81 (0.32)	0.66 (0.00)
Father: secondary school	1.06 (0.44)	1.04 (0.49)	1.06 (0.41)	1.04 (0.47)
Father: tertiary school	0.64 (0.00)	0.72 (.004)	0.63 (0.00)	0.72 (0.00)
Wealth	1.13 (0.00)	1.15 (0.00)	1.13 (0.00)	1.18 (0.00)
Move to more urban area	1.33 (0.00)	1.31 (0.00)	1.36 (0.00)	1.33 (0.00)
Move to equally urban area	1.54 (0.00)	1.53 (0.00)	1.55 (0.00)	1.54 (0.00)
Move to more urban area; subsequent employment	2.59 (0.13)	2.51 (0.12)		
Move to equally urban area, subsequent employment	1.02 (0.93)	1.03 (0.89)		
Weibull shape parameter (standard error)	1.41 (0.04)	1.44 (0.03)	1.41 (0.04)	1.44 (0.03)
Hausman test statistic	27.79 (.0059)		25.61 (0.004)	

Notes to table: Table entries represent time ratios associated with unit changes in the associated variables. P-values are in parentheses.

PARAGUAY				
Variable name	Full Sample	Migrants Only	Full Sample	Migrants Only
Mother's age at conception	1.07 (0.32)	1.06 (0.04)	1.07 (0.33)	1.06 (0.05)
Mother's age at conception^2	1.00 (0.05)	1.00 (0.00)	1.00 (0.05)	1.00 (0.00)
Mother's age at marriage	0.91 (0.00)	.91 (0.00)	.91 (0.00)	0.91 (0.00)
Mother: secondary school	1.04 (0.82)	1.10 (0.30)	1.07 (0.71)	1.11 (0.26)
Mother: tertiary school	0.98 (0.97)	1.16 (0.47)	1.01 (0.99)	1.16 (0.48)
Father: secondary school	1.50 (0.02)	1.29 (0.00)	1.48 (0.03)	1.29 (0.00)
Father: tertiary school	1.77 (0.17)	0.88 (0.44)	1.76 (0.18)	0.88 (0.43)
Wealth	1.40 (0.00)	1.33 (0.00)	1.41 (0.00)	1.33 (0.00)
Move to more urban area	1.11 (0.55)	1.29 (0.09)	1.19 (0.33)	1.37 (0.03)
Move to equally urban area	1.07 (0.63)	1.24 (0.04)	1.13 (0.35)	1.32 (0.01)
Move to more urban area; subsequent employment	1.72 (0.35)	1.65 (0.35)		
Move to equally urban area, subsequent employment	1.66 (0.14)	1.60 (0.12)		
Weibull shape parameter (standard error)	1.13 (0.06)	1.27 (0.04)	1.13 (0.05)	1.27 (0.04)
Hausman test statistic	8.57 (0.739)		7.70 (0.658)	

Notes to table: Table entries represent time ratios associated with unit changes in the associated variables. P-values are in parentheses.

PERU				
Variable name	Full Sample	Migrants Only	Full Sample	Migrants Only
Mother's age at conception	1.17 (0.00)	1.19 (0.00)	1.18 (0.00)	1.19 (0.00)
Mother's age at conception^2	1.00 (0.12)	1.00 (0.15)	1.00 (0.16)	1.00 (0.20)
Mother's age at marriage	0.94 (0.00)	0.93 (0.00)	0.94 (0.00)	0.93 (0.00)
Mother: secondary school	1.42 (0.00)	1.81 (0.00)	1.42 (0.00)	1.81 (0.00)
Mother: tertiary school	0.72 (0.00)	1.55 (0.00)	0.73 (0.00)	1.55 (0.00)
Father: secondary school	1.08 (0.14)	0.92 (0.01)	1.06 (0.27)	0.91 (0.00)
Father: tertiary school	0.93 (0.41)	0.79 (0.00)	0.92 (0.32)	0.79 (0.00)
Wealth	1.27 (0.00)	0.97 (0.16)	1.27 (0.00)	0.97 (0.16)
Move to more urban area	1.01 (0.92)	1.07 (0.32)	1.06 (0.41)	1.10 (0.14)
Move to equally urban area	0.99 (0.87)	0.95 (0.15)	1.03 (0.62)	0.98 (0.54)
Move to more urban area; subsequent employment	1.35 (0.06)	1.18 (0.33)		
Move to equally urban area, subsequent employment	1.69 (0.00)	1.71 (0.00)		
Weibull shape parameter (standard error)	1.72 (0.05)	1.55 (0.02)	1.72 (0.05)	1.55 (0.02)
Hausman test statistic	255.67 (0.00)		299.39 (0.00)	

Notes to table: Table entries represent time ratios associated with unit changes in the associated variables. P-values are in parentheses.

PHILIPPINES				
Variable name	Full Sample	Migrants Only	Full Sample	Migrants Only
Mother's age at conception	1.01 (0.79)	1.01 (0.67)	1.02 (0.56)	1.01 (0.58)
Mother's age at conception^2	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)
Mother's age at marriage	0.92 (0.00)	0.92 (0.00)	0.93 (0.00)	0.92 (0.00)
Mother: secondary school	1.28 (0.00)	1.25 (0.00)	1.29 (0.00)	1.25 (0.00)
Mother: tertiary school	1.23 (0.06)	1.21 (0.01)	1.26 (0.04)	1.22 (0.00)
Father: secondary school	1.23 (0.01)	1.21 (0.00)	1.22 (0.01)	1.21 (0.00)
Father: tertiary school	1.42 (0.00)	1.39 (0.00)	1.40 (0.00)	1.38 (0.00)
Wealth	0.80 (0.00)	0.81 (0.00)	0.80 (0.00)	0.81 (0.00)
Move to more urban area	1.03 (0.80)	1.18 (0.06)	1.08 (0.49)	1.24 (0.02)
Move to equally urban area	0.84 (0.05)	0.96 (0.39)	0.88 (0.15)	1.00 (0.96)
Move to more urban area; subsequent employment	3.69 (0.05)	3.53 (0.05)		
Move to equally urban area, subsequent employment	2.74 (0.00)	2.68 (0.00)		
Weibull shape parameter (standard error)	1.12 (0.03)	1.18 (0.17)	1.11 (0.03)	1.18 (0.01)
Hausman test statistic	16.63 (0.16)		18.04 (0.05)	

Notes to table: Table entries represent time ratios associated with unit changes in the associated variables. P-values are in parentheses.

Full Sample				
	Move to more urban area	Move to equally urban area	Move to more urban area; subsequent employment	Move to equally urban area, subsequent employment
Brazil	1.71 (0.10)	1.26 (0.17)	0.73 (0.65)	1.07 (0.89)
Colombia	1.29 (0.10)	1.26 (0.06)	2.12 (0.16)	1.96 (0.19)
Egypt	1.03 (0.50)	0.95 (0.19)		
Morocco	1.33 (0.00)	1.54 (0.00)	2.59 (0.13)	1.02 (0.93)
Paraguay	1.11 (0.55)	1.07 (0.63)	1.72 (0.35)	1.66 (0.14)
Peru	1.01 (0.92)	0.99 (0.87)	1.35 (0.06)	1.69 (0.00)
Philippines	1.03 (0.80)	0.84 (0.05)	3.69 (0.05)	2.74 (0.00)

Migrants Only				
	Move to more urban area	Move to equally urban area	Move to more urban area; subsequent employment	Move to equally urban area, subsequent employment
Brazil	1.51 (0.14)	1.16 (0.27)	0.76 (0.67)	1.04 (0.92)
Colombia	1.20 (0.15)	1.15 (0.10)	2.25 (0.14)	2.16 (0.15)
Egypt	1.20 (0.01)	1.12 (0.08)		
Morocco	1.31 (0.00)	1.53 (0.00)	2.51 (0.12	1.03 (0.89)
Paraguay	1.24 (0.04)	1.60 (0.12)		
Peru	1.07 (0.32)	0.95 (0.15)	1.18 (0.33)	1.71 (0.00)
Philippines	1.18 (0.06)	0.96 (0.39)	3.53 (0.05)	2.68 (0.00)

	More urban			**Equally urban**		
	Proportion of women migrating	Proportion of women employed	Proportion of women migrating and employed	Proportion of women migrating	Proportion of women employed	Proportion of women migrating and employed
Brazil	0.060	0.010	0.173	0.172	0.019	0.113
Colombia	0.122	0.012	0.105	0.344	0.015	0.046
Egypt	0.103	0.001	0.008	0.193	0.001	0.004
Morocco	0.082	0.001	0.015	0.166	0.018	0.110
Paraguay	0.045	0.005	0.113	0.130	0.019	0.144
Peru	0.057	0.009	0.152	0.225	0.013	0.058
Philippines	0.078	0.006	0.078	0.310	0.019	0.062