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**Children and Maternal Migration:
Evidence from Exogenous Variations in Family Size**

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Abstract

Both theoretically and empirically, childbearing decreases labour supply of females, but few papers examine the effect of children on whether women emigrate to work. Using exogenous variations in family size induced by parents' preferences for mixed sibling-sex composition in instrumental variable estimations, we find that, in Sri Lanka where most migrants are women and mothers, children decrease labour participation of females in the domestic market but they increase the likelihood of females working abroad.

Keywords: maternal migration, childbearing, Sri Lanka.

JEL Codes: F22, J13, J22

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I. Introduction

What is the effect of childbearing on whether women work abroad? Do children reduce maternal migration as they do maternal labour supply in domestic markets?

Many papers find children reduce female labour supply, but few examine the effects of children on maternal migration. Using instrumental variable (IV) estimations, Angrist and Evans (1998), for example, find a child decreases women's labour market participation rates in the US by about nine percentage points; Cruces and Galiani (2007) similar estimates for Mexico and Argentina, 8-9 percentage points; Baez (2008) a larger estimate in Colombia, 28 percentage points. In contrast, papers on migration usually use fertility as a control variable in ordinary least square (OLS) regressions without addressing fertility's possible endogeneity (Prelicpeanu, 2008).

We examine whether children affect maternal migration from Sri Lanka using exogenous variations in family size. The case of Sri Lanka is interesting because most Sri Lankan migrants are females and, like in countries where most migrants are females, mothers: They go abroad to work and leave their children and husbands in Sri Lanka. They are also low skilled, most of whom work as housemaids in the Middle East. Because they are atypical, children, therefore, may affect the female labour supply abroad differently.

II. Empirical Strategy and Data

Because childbearing is endogenous, we estimate the effect of children on maternal migration using IV methods. Following Angrist and Evans (1998), we use sibling-sex composition in families with two or more children as an instrument for the number of children in a two-stage regression.¹ In the first stage, we estimate

$$more\ than\ two\ children_{ij} = \alpha + \beta same\ sex_{ij} + X\gamma + \zeta_j + \varepsilon_{ij} \quad (1)$$

where *more than two children*_{ij} is an indicator equals one if a mother in household *i* who lives in district *j* has three or more children and zero otherwise; *same sex*_{ij} is the instrumental variable, an indicator equals one if the first two children in household *i* are both boys or both girls and zero otherwise; *X* is a vector of individual- and household characteristics, which includes the mothers' age, religion, years of schooling (in some specifications we also include the households' source of lighting and cooking method)—each as a set of dummy variables; ζ_j is district fixed-effects, which control for observed- and unobserved time-invariant district-specific factors; and ε is the error terms. In the second stage, we estimate

$$migrated_{ij} = \delta + \theta \widehat{more\ than\ two\ children}_{ij} + X\lambda + \zeta_j + \varepsilon_{ij} \quad (2)$$

¹ We could also use twins as an instrument, but the number of twins in our data is small.

where $migrated_{ij}$ is the migratory status of the mother in household i who lives in district j equals one if she is a migrant worker and zero otherwise, and $\widehat{more\ than\ two\ children}$ is the predicted probability of having more than two children in Equation (1).

We use the Sri Lanka Integrated Survey 1999-2000, a representative survey of Sri Lanka except for the Northern and Eastern regions where the then on-going civil war disrupted data collection.² It includes 7,500 households and 35,181 individuals across eight provinces, 25 districts, and 500 communities. Because we analyse children in households with at least two children below the age of 16, our sample has 3,761 observations.

III. Results

Table 1, which presents the first-stage estimates, shows sibling-sex composition, *same sex*, predicts *more than two children* well: Having two boys or two girls increases the likelihood that parents have more children by 7-9 percentage points. The estimates are similar and significant statistically across the three specifications regardless of whether we control for mother or household characteristics.

[Insert Table 1 here]

Table 2, which presents the second-stage estimates, shows that children increase *migrated*, female labour supply abroad: Having more children,

² The data are available from <http://www.erd.gov.lk/publicweb/erddocs.html>.

induced by having two boys or two girls, makes mothers more likely to migrate abroad to work by 6-8 percentage points. The two-stage least square (2SLS) estimates are similar and significant statistically whether we control for covariates across the three specifications in columns 2-3; they are bigger than OLS estimate in column 1, which is about three percentage points.

[Insert Table 2 here]

Table 3 presents the effect of children by the education of the mothers from regressions in which we introduce the interaction terms of education levels of the mothers with *same sex* (in the first stage) and *more than two children* (in the second stage). The first stage estimates in column 1 show *same sex* predicts *more than two children* similarly across education levels of the mothers. The second stage estimates, however, indicate children matter more on the migration of the less educated mothers.

[Insert Table 3 here]

We also examine the effects of children, using the same instrumental variable, on female labour participation in the domestic market (i.e., in Sri Lanka) and male labour supply abroad (i.e., paternal migration). Table 4 confirms the findings in the literature that children reduce domestic labour participation of females and that they do not seem to affect labour supply of males. The estimate of the first is negative, about seven percentage points, and significant statistically; that of the second is insignificant statistically.

[Insert Table 4 here]

IV. Concluding Remarks

Children decrease domestic labour supply, but they increase labour supply of females abroad, especially the less educated. (Children do not seem to affect labour supply of males.) Therefore, in developing countries like Sri Lanka that send their unskilled females to work abroad, there may be heterogeneity in the effects of childbearing on labour participation of females (in domestic v. foreign markets).

The estimates of the effect of children on domestic labour supply of females confirm the findings in the literature, but those of the effect of children on labour supply abroad are surprising. We can perhaps offer two explanations: monetary incentive and childcare. One, having more children is costly and, hence, requires more income, which induces the mothers to work abroad. Athukorala (1990), for example, argues that unskilled women from Sri Lanka are more likely to work abroad since wages abroad are five to ten times higher. Two, if the mothers work abroad, they cannot take care of their children, which they may find undesirable; but, if they have more children, they may have the eldest child to provide the childcare for younger children if he or she is old enough. Gamburd (2000) and Save the Children (2006), for example, show that, older children are likely to take care of younger siblings in the mothers' absence. We also find in our data that when a mother migrated

to work, the eldest child in the family was on average 12-14 years old and the mother was on average 37 years old.

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Table 1. The first-stage estimates

Dependent variable: More than two children	(1)	(2)	(3)
Same sex	0.086*** (0.010)	0.081*** (0.010)	0.068*** (0.011)
Covariates			
Age and religion		✓	✓
Years of schooling, source of lighting, source of cooking			✓
Number of observations	3,761	3,761	3,761
F-statistic of excluded instrument	24.18	18.71	14.26

Notes: Each cell is the estimate of the second-stage regression of *more than two children* on *same sex* and some covariates and district fixed-effects. *More than two children* equals one if a mother has two or more children and zero otherwise; *same sex* equals one if the first two children are boys or girls; each of the covariates enters the regressions as a set of dummy variables. Robust standard errors are in parentheses; the sign *** indicates statistical significant at 0.1 percent level.

Table 2. The second-stage estimates of the effect of children on labour supply abroad

Dependent Variable: Migrated	OLS		2SLS	
	(1)	(2)	(3)	(4)
More than two children	0.032* (0.015)	0.078** (0.028)	0.068* (0.032)	0.061* (0.030)
Covariates				
Age and religion	✓		✓	✓
Years of schooling, source of lighting, cooking method				✓
Observations	3,761	3,761	3,761	3,761

Notes: Each cell is the estimate of the second-stage regression of *migrated* on *more than two children*, district fixed-effects and some covariates using *same sex* as an instrumental variable (each of the covariates enters the regressions as a set of dummy variables). *Migrated* equals one if a mother worked abroad; *more than two children* equals one if a mother has two or more children; *same sex* equals one if the first two children are boys or girls. The sample includes married women with two or more children. Robust standard errors are in parentheses; the signs ** and * indicate statistical significant at one percent level and five percent level, respectively.

Table 3. The 2SLS estimates with education level interaction terms

	First stage (1)	Second stage (2)
Primary	0.061** (0.019)	0.072** (0.025)
Secondary	0.058** (0.021)	0.063* (0.029)
Higher	0.057** (0.022)	0.043 (0.024)
Observations	3,761	3,761

Notes: Columns 1 and 2 are the first- and second stage regressions that includes interaction terms of dummies of completion of *primary*, *secondary*, or *higher education* with *same sex* (column 1) and *more than two children* (column 2), district fixed-effects and sets of dummies for the age of mothers and their religion. We present the estimates of the interaction terms only for brevity. *Primary* equals one if a mother has 1-5 years of schooling, *secondary* 6-11 years, *higher* more than 11 years. The dependent variable in the first stage is *more than two children*; in the second stage *migrated*. *Migrated* equals one if a mother worked abroad; *more than two children* equals one if a mother has two or more children; *same sex* equals one if the first two children are boys or girls. The sample includes married women with two or more children. Robust standard errors are in parentheses; the signs ** and * indicate statistical significant at one percent level and five percent level, respectively.

Table 4. Local labour market participation and paternal migration

	Mother worked in Sri Lanka (1)	Father worked abroad (2)
More than two children	-0.071** (0.026)	0.032 (0.024)
Observations	3,761	3,876

Notes: Each cell is the estimate of the second-stage regression of the dependent variable listed on top row on *more than two children* using *same sex* as an instrumental variable. Control variables include district fixed-effects and sets of dummies for the age of mothers and their religion. *More than two children* equals one if a mother has two or more children and zero otherwise; *same sex* equals one if the first two children are boys or girls. The sample in column 1 includes married women with two or more children; that in column 2 married men with two or more children. Robust standard errors are in parentheses; the sign ** indicates statistical significant at one percent level.