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Effects of Parental Migration on Education and Personality: Evidence from Indonesia

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Effects of Parental Migration on Education and Personality: Evidence from Indonesia

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science in Statistics and Analytics

by

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Abstract

In developing countries, migration can be an important method for many families and households to produce additional income via remittances in order to meet their needs or invest in children's human capital. However, migration is a dynamic process and the absence of a parent can have negative effects on these same outcomes for those children left behind. This paper explores how parental migration is associated with their children's completed education and how these associations are heterogeneous by family compositions in Indonesia. I use a longitudinal dataset which allows for parents' migrations to be attributed throughout an individual's childhood to measure the cumulative impact. There is suggestive evidence that the effect varies by which parent migrates, but results are not significant throughout. However, for certain cases, migration can help overcome detrimental circumstances, such as the lack of a father in the household, to increase education. I also explore how parental migration correlates with personality. There is suggestive evidence that a parent migrating can produce effects along certain personality aspects. In addition, given that disentangling migration from other endogenous variables remains a constant difficulty, this paper attempts to measure a lower bound on the bias that is present in the estimates in order to probe their robustness.

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1 Introduction

Migration is in an increasingly common decision among many individuals and families in many countries. As of 2017, there are approximately 258 million people living outside of the country of their birth, a staggering growth of nearly 50% since 2000 (United Nations 2017). Internal migration, which often generates less focus, is by some estimates a significantly larger phenomenon than international migration (IOM 2005).

Migration can have a significant effect on a household's well-being. There are two channels which affect family members left behind by migrants, through migrant remittances and parental absence. In 2016, migrants from developing countries sent approximately \$416 billion home (United Nations 2017). These monetary flows can comprise a large part of a household's income, and families use these funds to meet budget constraints or as an investment tool for education, health, and other outcomes. However, the transfer of remittances is not the only effect of migration. Often, migrants are just one member of larger households, and the loss of a household member, even temporarily, can have significant effects on other members. This is especially true for children left behind by parents who are migrating. Due to conflicting mechanisms, the final effects on migrants' families left behind are not always well understood (Antman 2013). Therefore, though households might weigh the relative costs and benefits of one or more family members migrating, circumstances back at home can interact in different ways to produce largely different outcomes for their children or other household members.

In this paper, I study whether parental migration can have effects on an individual's education and personality and consider several research questions. How does a parent migrating affect a person's opportunity to pursue more education throughout their childhood? What heterogeneities are present due to family composition and income? And, if the absence of a

parent can disrupt normal family life, does a parent migrating cause enough disruption that effects can be detected in an individual's personality?

Indonesia has a long history of internal migration and currently is one of the most prominent migrant-sending nations in Asia. It therefore provides an excellent context to study the effects of migration on children left behind. I made use of a longitudinal dataset that is a robust and representative source of information on life in Indonesia and is especially useful because it describes respondents' previous migration events in detail.

In order to estimate the effect of parental migration on an individual's education or personality, I first matched adults to their childhood households to determine if a parent migrated throughout their childhood. Following that, I used OLS estimates to measure the average differences and the interaction between parent migration and certain household circumstances, such as single parenthood. I found suggestive evidence that the effects on educational attainment can vary considerably depending on which parent migrates and the make-up of the remainder of the household. Similarly, for personality measures, there is suggestive evidence of some small effects depending on which parent migrates. However, many of these results are noisily estimated.

This paper contributes to the literature by extending previous analyses of the education of children to generalize to adults. Many studies have focused on samples of children whose parents have very recently migrated or are currently away (Giannelli and Mangiavacchi 2010; Lu 2014; Salas 2014). By using a cross-section of adults whose parents migrated in their childhood, I attempt to measure what the cumulative impact might be for an individual's human capital after education decisions have been made.

A second contribution is the use of personality measures to describe associations of parent migration for apparently novel results. Some literature has highlighted the psychological effects of parental migration, but little has focused on the association between personality and parental migration (Graham and Jordan 2011; Hook and Glick 2020; Mazzucato et al. 2015). In addition, personality as a non-cognitive skill has been stressed as an important factor for cognitive skills such as education (Cunha and Heckman 2008; Kautz et al. 2014). Therefore, I attempted to bridge this gap between the two and present apparently novel, exploratory results.

I begin with a review of relevant background on theories of migration and other empirical results. Next, I present a more detailed discussion of the methodology, data, and estimation strategy, followed by a review of the results of the analysis and concluding remarks.

2 Background

I begin this section with an overview of several prominent theories of migration in economics. I then summarize some of the primary mechanisms related to the research questions and provide examples of empirical results in related research. Finally, I provide additional background on migration in Indonesia.

2.1 Migration Decision and Household Welfare: Theory and Empirical Evidence

Historically, literature on migration choices were primarily based around the core theory that individuals are driven to migrate by beneficial wage differentials. If an individual can earn a higher wage elsewhere that outweighs transit costs, they will tend to migrate (Harris and Todaro 1970; Lewis 1954; Massey et al. 1993; Sjaastad 1962).

Later, some authors shifted away from this perspective to focus on the dynamics between households and migration. This body of work is described as the “New Economics of Labor Migration” (NELM) and was introduced by authors such as (Stark and Bloom 1985). In their formulation, migration is not merely undertaken by individuals, but migration decisions are made by a larger, collective unit, generally the household. Another key divergence from previous frameworks is that households and families share both the costs and benefits of a member migrating. Additionally, migration by a household member is a method to reduce intra-household risk by seeking new, diverse sources of income. Migration of one member allows the group to change its small economy by providing means for a household member to move to a place where earnings are unrelated to shocks at their origin. (Taylor 1999) summarizes migration decisions as, “family strategies to raise income, obtain funds to invest in new activities and insure against income and production risks”.

As mentioned, migration is a household decision and, therefore, its costs and benefits are shared throughout the household. Benefits are primarily through the remittances that come via the migrant to be used in the household. The costs themselves manifest due to the absence of one or more adults in the household. For children of a migrant, this means a significant loss of parental supervision and caretaking. While the household might expect that additional income can help increase certain outcomes for their children, the absence of a parent may have a negative effect on the same outcome. Given these conflicting forces, the net effect of a parent’s migration on their children’s education is not always clear (Antman 2013; Hook and Glick 2020). Antman points to several mechanisms that ultimately influence a child’s education as mediated by parental migration. First, remittances increase a family’s income which may allow for increased allocations to a child’s education and also decrease child labor in or out of the

home (Acosta 2011; Calero, Bedi, and Sparrow 2009; Cuadros-Menaca and Gaduh 2019). For example, in the Philippines positive shocks in migration remittances have been shown to increase child schooling and educational expenditure (Yang 2008). Also, the effect of remittances has shown to have a positive impact on the likelihood of a child attending a private school in Peru (Salas 2014).

Second, the absence of a parent can have negative effects due to a loss of parental supervision leading to more absenteeism or school disruptions. Also, the remaining parent or caretakers might hold education for the child with less value and therefore allocate remaining resources elsewhere. In the context of Albania, the migration of a parent has been shown to have negative effects on attendance, increasing disruptions and the likelihood of dropping out (Giannelli and Mangiavacchi 2010). In Mexico, parental migration has been shown to have negative effects on time allocated to school in the short term and may increase time allocated to work outside the home for young boys (Antman 2011).

Either of these factors could be different depending on the age and gender of the child both at the time of migration and throughout a parent's absence. For example, other evidence from Mexico has demonstrated that migration of the father has positive effects on a daughter's educational attainment, depending on her age, when the father migrates when compared against older siblings (Antman 2012).

Moreover, the effects can also interact with which parent migrates. If the primary caretaker, usually the mother, migrates we might expect different results than if the father did. In the Philippines, by exploiting demand shocks, there is evidence that children of migrant mothers lag behind those with migrant fathers in school (Cortes 2015).

Finally, the possibility of migration can also influence individuals to pursue higher education, known as the “brain gain” result. For example, authors have shown a positive relationship between the future probability of migrating and probability of completing secondary education (Batista, Lacuesta, and Vicente 2012). The authors attribute this result to the fact that the absolute wage differentials of migrating outweigh the fact that education may have lower relative return abroad or that higher education implies lower migration costs, when considering things such as language differences.

McKenzie and Rapoport (2011) provides a useful and more detailed framework to investigate a research question such as this. Schooling costs for children are met out of a household’s resources. Migration can increase these resources, thereby increasing the potential maximum amount of school. However, there are costs associated with parental migration, primarily through the disruption of household structure. The authors propose three scenarios: 1.) Relieving budget constraints (through remittances) outweighs the costs and increases schooling; 2.) Remittances are not enough to overcome all budget constraints and schooling falls due to less parental supervision; 3.) Schooling falls but more so for poorer households due to larger budget constraints. Clearly, the impact of parental migration can be seen as ambiguous. This paper seeks to investigate the kinds of forces in the aforementioned framework, based on which parent migrates and the interaction with family makeup and income.

In investigating a second outcome, I considered the relationship between an individual’s personality and whether a parent migrated throughout their childhood. An emphasis on non-cognitive skills and economic outcomes has grown recently, and personality can be considered one of these non-cognitive skills (Cunha and Heckman 2008; Kautz et al. 2014). An individual’s personality can have wide ranging effects on outcomes throughout an individual’s life, and

personality dimensions can be said to produce grit, self-control, or perseverance in individuals, which have been shown to be associated with positive outcomes in education, health, or employment (Carneiro, Crawford, and Goodman 2007; Kautz et al. 2014; Schoon and Gutman 2013). Considering that family compositions can influence personality, this implies disruptions to households, such as divorce or job loss, can have consequences on the psychological well-being of children (Peter 2016; Sun and Li 2002).

Personality may also be an indicator of the decision to migrate (Ayhan, Gatskova, and Lehmann 2017; Jokela 2009). The literature on personality and parental migration is scant, however, there is some prior literature that investigates the relationship between the migration of a parent and the mental health of their children left behind. For example, in China there is evidence that children who were left behind by migrating parents experience a higher incidence of mental health problems, especially depression (Adhikari et al. 2014; Jia and Tian 2010; Zhou et al. 2018). Similarly, in Sri Lanka, children of international migrants showed a higher incidence of behavioral problems (Wickramage et al. 2015).

2.2 Migration in Indonesia

Indonesia is the fourth-largest country in terms of population and since the 1960s has seen rapid economic expansion similar to, or even exceeding, much of what the rest of Asia has experienced. In recent decades, Indonesia has seen significant growth in its GDP with an average growth rate of 5.5% per year since 2000. This growth has driven changes in the structure of the economy. For example, industry and services account for roughly 80% of GDP, and agriculture has dropped to account for only 14%, down from 21% in 1990. Additionally, life expectancy has

increased by nearly 15% while infant mortality rates have decreased by approximately 58%. (World Bank 2019a).

The process of migration, both internally and internationally, is intrinsic to the development of Indonesia as a nation over the last century. Prior to independence, Dutch colonial authorities recruited labor from populous islands such as Java as they expanded plantations on labor scarce islands. In addition, colonial activities on those same populous islands led to growth in city centers such as Jakarta. These larger cities in turn attracted migrants seeking new opportunities (Tirtosudarmo 2009). Lottum and Marks (2012) cite an analysis of a 1930 census (Volkstelling 1930) which shows that almost 12% of Indonesians lived outside the district of their birth. Of those, nearly 5% eventually moved outside their home provinces. Following independence in 1945 and the end of World War II, the Indonesian government reinstated the same kind of migration organized by the Dutch, a policy known as “transmigration”. The first trans-migrants under this program were settled in Lampung in 1950. Transmigration as a national policy was pursued throughout the 1970s to 1990s as a means of alleviating population density on the inner islands (such as Java) and thereby investing in the outer islands. It also attempted to forge a stronger national identity in ethnically sorted Indonesia (Bazzi et al. 2019; Kebschull 1986; MacAndrews 1978). Even as early as 1971, about 5% of Indonesians lived outside of their birth province, a rate that reached over 10% by 2000 (Tirtosudarmo 2009).

International migration has also played a large role in Indonesian development more recently. Indonesia has been considered a labor surplus nation throughout its development, and throughout the 1980s and 1990s, households increasingly sent members abroad (Hugo 2000). By 2018, remittances into Indonesia from citizens living internationally were estimated to be 1.0%

of Indonesian GDP, or about \$11 Billion (World Bank 2019). The recent growth of these payments has been driven predominately by women seeking employment as unskilled or semi-skilled domestic workers in other countries such as Malaysia or throughout the Middle East (Hugo 2000). As described in (Hugo 2002), migrants tend to be individuals, often married, who leave the remainder of their family in Indonesia throughout the period of their migration. While migration is managed via official government-run overseas work programs, much of the movement across borders happens with minimal oversight and thus remains undocumented (Hugo, Graeme 1995; Tirtosudarmo 2009).

The relationship between local economic conditions and the payoff of migration is also apparent in recent Indonesian history. Indonesia was hit especially hard by the Asian financial crisis of 1997. During the crisis, the Indonesian rupiah dropped to 17000:\$1USD from 2400:\$1USD before 1997. The political ramifications were apparent, as the economic crisis led to the resignation of President Soeharto and the creation of a new government. These and other effects led to large increases in unemployment and drove many families to choose to send a member abroad. International migration to countries such as Malaysia, Singapore, or Saudi Arabia increased significantly throughout and after 1997. However, due to the breadth of the crisis, many Indonesians found that attaining employment was difficult in areas throughout Asia, and especially in Malaysia (Ananta et al. 1998).

Despite this, the body of literature on the effect of migration on households left behind in Indonesia is small but still growing. Many recent studies have focused on psycho-social effects rather than strictly economic implications (Hoang, Yeoh, and Wattie 2012; Lam and Yeoh 2018, 2019). It has been demonstrated that caretakers of children left behind by migrating spouses or partners have a higher incidence of mental disorders, and this effect can be even greater when

remittances or contact with the migrant is interrupted (Graham, Jordan, and Yeoh 2015).

Children of migrant fathers left in the care of their mothers are more likely to show emotional or behavior disorders during periods of separation (Graham and Jordan 2011). In contrast, previous evidence suggests that migration by parents can have a beneficial relationship with a child's physical growth and development, though the final effect may differ based on whether parents migrate internally or internationally (Lu 2015). Related research in education has found small negative or null effects of parental migration on a child's grade level but small positive effects on educational expenditure (Lu 2014).

3 Methodology

I begin this section with a discussion of the data used for analysis. Next, I describe the estimation strategies for the research questions, followed by a review of the key variables and descriptive statistics.

3.1 Data

In investigating the research questions, I utilized data from the Indonesian Family Life Survey (IFLS) conducted by the RAND corporation. IFLS is a longitudinal dataset which constructs a sample of the Indonesian population of over 30,000 individuals across thirteen provinces in Indonesia (RAND 2018). IFLS has been conducted in waves, beginning in 1993, then in 1997, 2000, 2007, and 2014. For this paper, I included all five waves of IFLS to create the dataset used in the analysis. IFLS is an ambitious and voluminous dataset that covers many areas of the households' socio-economic and familial circumstances as well as related data points on their communities. Moreover, since the dataset is longitudinal, it provides opportunities to track

individuals, relationships and locations within households over long periods of time. IFLS is marked by a robust series of variables that measure individuals' migrations throughout their adult lives (defined as any move longer than six months), including the destination (both within Indonesia and internationally), with whom they traveled, and for what reasons. I utilized these features to ensure that the migration events by parents were attributed appropriately to their children at the correct age.

The final sample for this analysis is restricted to individuals who were under the age of eighteen at the time of the first IFLS survey in 1993, and the dependent variables were measured from the most recent wave conducted in 2014. This creates a cross-sectional sample of adults between the ages of 22 and 39. Given that education decisions are dynamic and on-going throughout a child's life up until adulthood, this choice ensures that all, or most, of the important education decisions for each individual have been accounted for. The human capital in terms of education can now be viewed as functionally static and thus allows for measurement of the cumulative effect of a parent migrating throughout an individual's life. This differs significantly from other works cited here, wherein authors primarily measure education in a sample of children while they are still in school.

3.2 Estimation Strategy

As mentioned, the mechanisms related to effects of parental migration on left behind household members are numerous and possibly contradictory. The absence of a parent is expected to have a negative effect, but in many cases may be counteracted by positive effects from remittances. In addition, each of these forces will likely have different effects on the composition of the family

left behind. Therefore, in order to investigate the effect of parental migration on an individual's education, I estimated the following model on the cross-section sample described above:

$$Y_i = \beta_0 + \beta_1 PMIG + \beta_2 FCHAR + \beta_3 (PMIG * FCHAR) + \beta_4 INDIV + \beta_5 MOED + D_k + \varepsilon_i$$

Where Y_i is total years of education and $PMIG$ is an indicator for the discussed groups of migration by parent. Considering that previous research has shown differences by which parent migrates, the results are expected to be similar in this context. $PMIG$ is an indicator for whether an individual's parents (one or both) migrated. The reference group throughout this analysis are those individuals whose parents did not migrate. $FCHAR$ is a vector of several family characteristics: extended family, siblings, single mothers/fathers, and below-median income. $MOED$ is an indicator variable for a mother's level of education, binned into groups ranging from no education to college. $INDIV$ is a vector of individual characteristics such as age and gender. D_k are district level fixed effects to control for environmental characteristics for an individual's community. The parameters estimated from $PMIG$ and its interactions with $FCHAR$ are of interest and pertain specifically to the research questions.

To measure the personality effects of migration, I used a similar model to the one described previously:

$$Y_i = \beta_0 + \beta_1 PMIG + \beta_2 FCHAR + \beta_4 ADLT + D_k + \varepsilon_i$$

Where Y_i is one of the five personality measures: extroversion, agreeableness, conscientiousness, neuroticism, and openness.¹ $ADLT$ is a vector of controls measured at the

¹ For the IFLS personality module, each respondent is given a list of statements and asked how strongly they agree that the statement describes themselves. There are a total of 15 statements, three for each personality dimension. Each statement produces a numerical score which combined give a respondent's total score for each dimension. One statement is intended to count as a negative against each total.

time of the personality questionnaire, such as employment or marital status. $FCHAR$ is a vector of controls associated with the respondent's childhood household, such as its level of income based on the same wealth indicators for the analysis of education and extended family status. D_k are the same district-level, fixed effects used in the education equation. The response variable is measured on an ordered scale, and for this analysis, I used an OLS model over logit and probit due to its well understood behavior and ease of interpretability.

3.3 Dependent Variables

For education, the independent variable is years of education completed. IFLS does not collect raw years of education. Therefore, the variable must be constructed based on the highest level of education attended and which "grade" was completed. For example, if the highest level of education attended was primary, and the highest grade completed was the 2nd grade, this equates to two years of schooling. Indonesia features a religious education track that runs somewhat parallel to the main secular track. These differences were normalized so that the number of years is the same for both types of schooling throughout the dataset.

A newly added module in IFLS5 uses the Big Five personality framework to measure personality along five dimensions which form the basis for the personality analysis (Strauss, Witoelar, and Sikoki 2016). The Big Five Framework measures an individual's personality along five dimensions: extroversion, agreeableness, conscientiousness, neuroticism, and openness (Oliver P. John, Laura P. Naumann, and Chris J. Soto 2008). As discussed, parental migration can cause significant disruption at home due to a parent's absence. This may manifest as negative forces on outcomes such as education, but also on non-cognitive skills such as personality dimensions.

Several of the big five dimensions, such as extroversion and conscientiousness, have been associated with employment and academic performance in other contexts (Barrick and Mount 1991; Komarraju et al. 2011; Trapmann et al. 2007). And previously, the IFLS personality module has been used to study labor market outcomes in Indonesia (Adhitya, Mulyaningsih, and Samudro 2019). Therefore, if parental migration can in fact affect mental health as seen in other contexts, there may be additional down-stream economic outcomes displayed in job performance, educational attainment, etc. (Adhikari et al. 2014; Graham, Jordan, and Yeoh 2015; Mazzucato et al. 2015). To my knowledge, this is the first study to link parental migration with personality outcomes, specifically in Indonesia. A random subsample of adults were given the personality module during IFLS5, so the final sample is significantly smaller than the one used for the education regression. The module measures each of the personality factors on a standard ordinal scale which form five separate dependent variables.

3.4 Measures of Parental Migration

For this analysis, I attempted to measure any cumulative effects of parental migration over a child's lifetime. Therefore, data from several waves of IFLS was used to construct variables as measured either in a respondent's early childhood and adolescence and other variables in their adulthood. To generate the parental migration variables, I combined the full history of migration events across all five waves. Migration events not related to work or labor search were removed so that the focus is labor migration. After matching parents' migration events with their children, I excluded all migration events before a child's birth. This is based on the assumption that migration of a parent (and thus their absence) has no effect on a child that is not yet born. This left approximately 2,000 migration events from which to create the indicator variables. If both

parents migrated together (or separately) following a child's birth, this was labeled as "both". Otherwise, it was labeled based on which parent migrated.

3.5 Other Variables

I matched parents and children based on household makeup in the first wave of IFLS (1993). Similarly, to produce district-fixed effects, I matched individuals to their original households from 1993. I then matched households to their original district as defined by the implementation of IFLS1. Other individual controls such as sex or age in the sample are those measured in IFLS5 (2014).

Using the above described parent-to-child relationships, the level of education of an individual's mother is recorded as it was in IFLS93 in years, which is then binned to several discrete groups. Some ($n = 1418$) of matched mothers' education was recorded as missing. Due to the relatively small incidence, I chose to keep rather than remove these observations. For these cases, the mother's education was coded as "missing".

IFLS provides several modules relating to consumption, wealth, or income. For this study, due to volatility of individual income and consumption measurements, I measured income by using principal component analysis (PCA) on durable household asset ownership. This method has been used previously in other circumstances as means to overcome difficulty or volatility in measuring income in developing countries (Filmer and Pritchett 2001; D. J. McKenzie 2005; Vyas and Kumaranayake 2006). Principal component analysis produces a series of orthogonal "principal components" that each explain a certain amount of variation in the original data. I selected a set of variables relating to the possession of durable goods such as cars, livestock, or land in order to produce the components. I also included the composition or

condition of the household's property such as the material of a household's floor or its source of water. From the PCA, I created an index of the weighted average of the factor scores for each observation. The primary variable interest was whether a household was above/below the median income for their district. I compared the resulting income indices to the inter-district median and allocated each household to above or below the median.

Extended families provide more in-house labor and can be instrumental in caring for children. To investigate how migration interacts with family composition, I used the IFLS roster data to produce indicators for family status. An extended family is defined as a household having adults, such as grandparents or aunts/uncles, other than the household head or their spouse. In contrast, additional children per parents can induce resource sharing and may have negative effects on an individual's education. Using the same household relationships, an individual is defined as having siblings if more than one child has the same father or mother within the same household. Finally, whether or not a child has a single parent can relate to both migration decisions, resources, and education decisions. Single parents, even within extended families, likely have fewer resources possibly creating more disruption at home than if their spouse was present. An individual is defined as having a single mother or father if either was not present in the household due to death, divorce or marital separation.

3.6 Descriptive Statistics

Table 1 displays descriptive statistics for the education sample. I grouped the observations based on the main independent variable in this analysis, the historical migration status of a person's parents. The total sample size is 12,593. It is important to note the skewness of the "treatment" of

migration by a parent. Only about 5% of the total sample falls into one of the migration groups. Of those, most are represented by solely fathers migrating (3% of the total sample).

Table 1: Descriptive Statistics – Education

	(1)	(2)	(3)	(4)
	None	Both	Father	Mother
N	11,927	112	404	150
Total %	0.947	0.009	0.032	0.012
Mean Years Edu.	9.421	9.759	10.015	9.289
Female	0.498	0.518	0.483	0.480
Mean Age	30.112	29.268	29.597	28.173
<u>Family/ Household</u>				
Below- Median Income	0.504	0.384	0.457	0.490
Siblings	0.923	0.973	0.980	0.933
Extended Fam	0.297	0.304	0.287	0.413
Single Mother	0.051	-	-	0.153
Single Father	0.008	-	0.010	-
<u>Mother's Education</u>				
None	0.232	0.170	0.238	0.147
Elementary	0.449	0.536	0.391	0.567
Junior Secondary	0.097	0.098	0.163	0.027
Senior Secondary	0.074	0.062	0.106	0.093
College +	0.033	0.080	0.032	0.067
Missing	0.115	0.054	0.069	0.100

Notes to Table 1: All variables generated from IFLS 1-5. Each column denotes one of the four migration by parent groups. All descriptive statistics are given within these groups.

Families whose parents both migrate (Column 2) show a larger percentage of mother's having some college education, perhaps indicating overall greater levels of education for the family. Similarly, income status is slightly higher for the migration by both parents group, and the migration by mothers group (Column 4) shows the highest percentage of below-median income households of migration groups. Extended families are relatively even around 35% but

skew to 41% for individuals whose mother migrates, perhaps indicating more social support for migrating mothers. Singleness is more prevalent for individuals whose mother migrates than those families who do not have migrants. For a mother’s education, it skews lower for those whose mothers migrate when compared to the other migration groups but is similar to the reference group.

Since parents may make multiple trips, the opportunity for disruption may last throughout a child’s adolescence. Considering this, Table 2 shows the percentage of migration period beginning and ending within a certain time period of one of the sample individuals. In the final sample, 48.6% of children of migrants show parents that took more than one trip, with 25.6% taking two trips. Many of the migrations began in the very early portion of an individual’s childhood, with 31% starting and ending before their fifth birthday.

Table 2: Age of Migration.

Age of First Migration	Age of Last Migration			
	Less than 5	Less than 10	Less than 15	Over 15
Less than 5	0.311	0.072	0.033	0.035
Less than 10	-	0.179	0.027	0.019
Less than 15	-	-	0.147	0.035
Over 15	-	-	-	0.139

Notes to Table 2: All variables generated from IFLS 1-5. Each column denotes one of the four groups of ages when a parent migrated. This is a symmetric matrix and only one diagonal is given.

Table 3 shows several key descriptive statistics for the sample used for the personality regressions. Not all adults in IFLS5 were given the personality modules so this sample is substantially smaller. The migration by parent groups in Columns 2 - 4 account for a larger percentage of the sample but still only amount to about 9% of observations. There is no apparent relationship between the groups for the personality measures and the differences at this point are rather small. All groups show employment and marriage at nearly the same rate.

Similar to the previous sample, migration by mothers shows a higher percentage of extended families and single mothers, and migration by both parents shows the lowest percentage.

Table 3: Descriptive Statistics – Personality

	(1) None	(2) Both	(3) Father	(4) Mother
N	5,515	96	316	104
% Total	0.914	0.015	0.052	0.017
Personality				
Extroversion	10.327	10.094	10.237	10.596
Agreeableness	11.716	11.615	11.722	11.423
Conscientiousness	11.426	11.625	11.345	11.337
Neuroticism	9.870	9.896	9.911	10.010
Openness	11.232	11.333	11.196	11.269
Controls				
Female	0.537	0.615	0.551	0.462
Employed in Prev. 12 Mo.	0.730	0.677	0.725	0.798
Single	0.255	0.312	0.297	0.279
Below-Median Income	0.540	0.453	0.543	0.519
Siblings	0.717	0.656	0.804	0.558
Extended Family	0.291	0.271	0.288	0.327
Single Mother	0.048	0	0	0.163
Single Father	0.008	0	0.013	0

Notes to Table 3: All variables generated from IFLS 1-5. Personality measures are collected from IFLS5 only. Each column denotes one of the four migration by parent groups. All descriptive statistics are given within these groups.

4 Results

4.1 OLS Estimates – Education

Table 4 displays the results of the OLS estimates for the proposed models (remaining coefficients given in appendix). Beginning with the baseline model of only migration indicators and individual controls in Column 1, there is a small but significant positive effect of a father or

both parents migrating, while a mother migrating shows a negative effect but is not significant. In Column 2, after accounting for the mother’s level of education, the migration coefficients for both parents and father are both smaller and a mother’s migration still holds a negative effect, and none maintain significance from zero. The importance of the mother’s education cannot be overstated, as it is the single largest coefficient throughout all other model specifications.

Table 4: OLS Estimates Summary – Years of Education

	Years of Education			
	(1)	(2)	(3)	(4)
Migration By Both	0.669** (0.279)	0.192 (0.222)	0.137 (0.222)	0.078 (0.220)
Migration By Father	0.423** (0.167)	0.184 (0.144)	0.134 (0.144)	0.126 (0.144)
Migration By Mother	-0.170 (0.256)	-0.311 (0.223)	-0.223 (0.226)	-0.218 (0.225)
Controls				
District Fixed Effects	Y	Y	Y	Y
Female	Y	Y	Y	Y
Age (years)	Y	Y	Y	Y
Mother’s Education		Y	Y	Y
Ex. Fam. and Siblings			Y	Y
Single Father/Mother			Y	Y
Below-Median Inc.				Y
Observations	12,387	12,387	12,387	12,387
R ²	0.056	0.227	0.231	0.243
Residual Std. Error	3.490 (df = 12345)	3.160 (df = 12340)	3.152 (df = 12336)	3.126 (df = 12335)
F Statistic	17.945*** (df = 41; 12345)	78.663*** (df = 46; 12340)	74.074*** (df = 50; 12336)	77.835*** (df = 51; 12335)

Notes to Table 4: All variables generated from IFLS 1-5. Robust Standard Errors reported in parentheses. Significance is given at the 1%, 5%, and 10% levels denoted by ***/**/* respectively. Migration by parent variables are indicators whose reference group is no migration by either parent. Mother’s education includes five indicator variables for each level of education, where the reference group is for observations where the value equals “No Education”. Other indicator variables include extended family (reference “No”), Below-Median Income (reference = “No”), and Female (reference = “No”), and single mother or father (reference = “No”).

After adding extended family status, sibling status, single parent status and income level in Column 4, the migration variables are still insignificant, though maintain some stability, and migration by father and mother coefficients attain consistency in their signs. If it is supposed that mothers are the primary caretakers and value education more than fathers on average, we might expect the signs to be as such as their absence would have a negative effect on education. Despite the apparent noise in these estimates, it is worth noting the size of the migration by parent indicators. At their largest, they imply a difference of approximately 0.5 years in education. Such coefficients are consistent with previous results on migration and other child education outcomes in Indonesia such as expenditures or enrollment (Berbée 2017; Lu 2014; Nguyen 2011). In addition, a study of a large scale school construction policy in Indonesia found that it led to an average increase of 0.12 to 0.19 years of education when implemented, which is comparable to several of the parental migration coefficients in the controlled models (Duflo 2001).

Table 5 shows the interactions of income, extended family, and single parenthood (mother or father) with the migration variables. These interactions help further describe the relationship between parental migration and a child's educational attainment. Since households share costs and benefits of migration, we might expect that the education outcomes differ based on different family compositions and their interaction with migration. Extended families provide more in-house labor to supervise children when other members are absent, and single parents already have fewer available adults to both earn income or care for children. Similarly, the returns to migration are likely different for below-median income families since labor migration is a means to pursue more income, and larger budget constraints are already present for below-median income households.

Table 5: OLS Estimates – Interactions

	Years of Education			
	(1)	(2)	(3)	(4)
	Below-Median Income	Extended Family	Single Mother	Single Father
Inter. Variable	-0.833*** (0.06)	0.174*** (0.066)	-1.065*** (0.146)	-0.136 (0.313)
Migration By Both	0.223 (0.278)	0.168 (0.254)	0.074 (0.220)	0.078 (0.220)
* (...)	-0.351 (0.449)	-0.31 (0.497)	- -	- -
Migration By Father	0.057 (0.194)	0.169 -0.169	0.123 (0.144)	0.134 (0.145)
* (...)	0.145 (0.286)	-0.150 (0.316)	- -	-1.030* (0.577)
Migration By Mother	-0.351 (0.336)	-0.157 -0.291	-0.421* (0.233)	-0.217 (0.225)
* (...)	0.270 (0.445)	-0.158 (0.459)	1.342* (0.709)	- -

Notes to Table 5: All variables generated from IFLS 1-5. Robust Standard Errors reported in parentheses. Significance is given at the 1%, 5%, and 10% levels denoted by ***/**/ * respectively. The coefficient for main effect of interaction variable is given in first row of table. The interaction coefficient is denoted in each row labeled “* (...)”. Migration by parent variables are indicators whose reference group is no migration by either parent. All other variables from the Full model of Table 4 are included but not reported here. Several interaction coefficients were not estimated (denoted by “-”) because observations did not exist. This is expected as migration by a father is not possible for a single mother household and vice versa.

In Column 1, the interaction with migration by mother and below-median income is larger than with migration by a father. However, the cumulative effect (migration by + below-median income + interaction) is still overall negative for all cases. For the extended family model in Column 2, all estimated interaction coefficients are negative, and the cumulative effect for each migration group is again negative or nearly 0 overall. Similar to the income interaction, the

overall migration group indicators bounce somewhat. Most importantly, for the interaction of single parent status (mother or father), several significant effects are detected. The migration by single fathers is about one less year of schooling, and for migration by a single mother is about 1.3 years of additional schooling. However, the effect is netted out to nearly zero when accounting for the cumulative effect along with the other coefficients.

In order to further investigate the apparent relationship between single motherhood and migration, the full sample was split among sub-samples along income and gender values. Results from the subsample regressions are shown in Table 6. Column 1 displays two regressions on female only and male only sub-samples. Column 2 displays the same regressions but filtered for only below-median income households. Single motherhood is still significantly negative across all four samples, accounting for approximately one fewer years of education on average. Similarly, it can be seen from all four samples that migration by a mother has a negative effect, though none are statistically significant. However, this effect is estimated to be slightly more negative for below-median income samples.

The interaction with single motherhood and migration shows a relatively large coefficient in all cases and is significant for both female sub-samples. The analogous coefficient in the below-median income–the male subsample is smaller. This is consistent with some prior evidence of gendered investment from migration in Indonesia (Berbée 2017). In the case of the below-median income–female sample, the interaction has a blunting effect that creates a much less severe outcome for those individuals with single mothers. It may be the case here that mothers value their daughter’s education more than a father might. This is consistent with some prior research which suggests transfers managed by women of the household are more beneficial to children than transfers managed by men (Duflo 2003). Considering if a single mother

migrates, she has the ability to dictate fully where the additional income from remittances is allocated and may allocate more to a daughter's education than elsewhere.

Table 6: OLS Estimates – Gender and Income Subsamples

	Years of Education			
	(1)		(2)	
	Female Only	Male Only	Below – Median Income Only	
			Female	Male
Single Mother	-1.041*** (0.200)	-1.119*** (0.202)	-1.046*** (0.269)	-0.902*** (0.267)
Migration By Both	0.385 (0.340)	-0.210 (0.342)	0.031 (0.454)	-0.431 (0.537)
* (...)	-	-	-	-
Migration By Father	0.094 (0.207)	0.173 (0.199)	0.334 (0.292)	0.005 (0.311)
* (...)	-	-	-	-
Migration By Mother	-0.430 (0.385)	-0.303 (0.360)	-0.675 (0.497)	-0.595 (0.501)
* (...)	1.801* (1.021)	0.731 (0.897)	1.564** (0.706)	1.161 (1.031)

Notes to Table 6: All variables generated from IFLS 1-5. Robust Standard Errors reported in parentheses. Significance is given at the 1%, 5%, and 10% levels denoted by ***/**/* respectively. The subsample is noted in the first two rows of the table. The interaction coefficient is denoted in each row labeled “* (...)”. Several interaction coefficients were not estimated (denoted by “–”) because observations did not exist. This is expected as migration by a father is not possible for a single mother household and vice versa.

The interaction between single motherhood and migration shows a large positive rather than negative value as seen in the primary migration by a mother coefficient. It may be the case that single mothers already have more social support than two-parent families. In order to investigate further, I split the full-sample into two groups along extended family status and

performed the single mother interaction regression. Table 7 displays a summary of the resulting coefficients.

The interaction coefficient for extended families in Column 1 is large and significant suggesting an additional 2.4 years of schooling on average. However, this does not show up in the non-extended families where the coefficient is much smaller and not statistically different from 0. This provides suggestive evidence that social support is important for the outcomes for a single mother’s children in the case of migration.

Table 7: OLS Estimates – Extended Family Subsamples

	Years of Education	
	(1)	(2)
	Extended Families	Non-extended Families
Migration By Mother	-0.557 (0.426)	-0.276 (0.334)
* Single Mother	2.367* (1.120)	0.585 (0.848)

Notes to Table 7: All variables generated from IFLS 1-5. Robust Standard Errors reported in parentheses. Significance is given at the 1%, 5%, and 10% levels denoted by ***/**/* respectively. The subsample is noted in the first row of the table.

4.2 OLS Estimates – Personality

A summary of the estimates of the personality model is given in Table 8 (remaining coefficients given in the Appendix). Each column is a regression of the discussed specification on one of the five personality dimensions. Gender shows to be the largest influence on the personality measures. Women show positive effects for extroversion (Column 1) and conscientiousness (Column 3, non-significant) and negative coefficients on all others. Recent employment shows some relation to conscientiousness and emotion stability (Column 4) and is also correlated

positively with neuroticism. The number of siblings is correlated with higher conscientiousness, and low-income status is negatively correlated with neuroticism and openness (Column 5).

Table 8: OLS Estimates Summary – Personality

	(1)	(2)	(3)	(4)	(5)
	Extroversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Migr. By Both Parents	-0.318 (0.203)	-0.087 (0.157)	0.255 (0.170)	0.059 (0.203)	0.039 (0.199)
Migr. By Father	-0.093 (0.114)	0.023 (0.088)	-0.033 (0.096)	0.093 (0.114)	-0.062 (0.112)
Migr. By Mother	0.240 (0.196)	-0.291* (0.152)	-0.020 (0.165)	0.155 (0.196)	0.036 (0.192)
Controls					
Sex and Age	Y	Y	Y	Y	Y
Marital Status	Y	Y	Y	Y	Y
Employment Status	Y	Y	Y	Y	Y
Ex. Family and Siblings	Y	Y	Y	Y	Y
Single Father/ Mother	Y	Y	Y	Y	Y
Below-Median Income	Y	Y	Y	Y	Y
District Fixed Effects	Y	Y	Y	Y	Y
Observations	5,981	5,981	5,981	5,981	5,981
R ²	0.028	0.009	0.025	0.028	0.020
Residual Std. Error (df = 5941)	1.948	1.510	1.636	1.950	1.906
F Statistic (df = 39; 5941)	4.378***	1.392*	3.858***	4.344***	3.091***

Notes to Table 8: All variables generated from IFLS 1-5. Robust Standard Errors reported in parentheses. Significance is given at the 1%, 5%, and 10% levels denoted by ***, **, * respectively. Indicator variables include Single (reference = “No”), Employed in the prev. 12 months (reference = “No”), Extended Family (reference = “No”), Single mother, Single father (reference = “No”), and Below-median Income (reference = “No”).

Similar to the effects shown on education of individuals, migration by parents seems to have a small or null relationship to the measured personality dimensions. There is one significant negative coefficient on the agreeableness measure (Column 2) for migration by mothers, indicating the temporary absence of one’s mother tends to lower one’s openness. It is worth

noting the relatively small absolute value of migration by father coefficients. In several cases, the term is several times smaller than the migration by mother/ both coefficients.

4.3 Robustness

Due to the difficulty of disentangling the endogeneity of a parent migrating, the OLS results discussed lack a causal quality to them. In order to probe the robustness of the initial education results, I used propensity score matching (PSM) to produce an estimate for the average treatment effect. Considering the “treatment” has more than two states, I utilized a variant of PSM for multiple treatments (Burgette et al. 2017; Feng et al. 2012; McCaffrey et al. 2013). First, I produced balancing scores from a series of gradient boosted logit models. I then estimated average treatment effects using a regression of years of education weighted by the balance scores. Since migration by parents is relatively under-represented in the sample, the procedure gives more weight to those observations. The choice of whether a parent migrates is modeled by similar covariates as above including the level of education of both parents and their employment status, except that individual controls such as age were measured based on the original measures of 1993. Appendix Table A.1 summarizes the PSM estimates compared with the OLS estimates. The PSM estimates of the signs are consistent with the OLS estimates from the full model and all estimates are larger than their OLS counterparts, but only the effect of migration by a mother is found to be significant. This supports both the noticeable volatility in the migration by both parents and father coefficients, but the relative stability of the migration by mother estimates.

A second robustness follow-up is shown in Appendix Table A.2. Using a recently developed method, the bias from the selection of unobserved attributes and the coefficient stability between short and long regressions can be estimated (Oster 2019). While several of the

coefficients achieve a measure of stability, this does not tell the full story. Therefore, I estimated the lower bound of the β coefficient ($\tilde{\beta}$), the size of δ and the bootstrap standard errors for both. Taken together, these estimates can be instructive on the bias that is present in certain specifications. $\tilde{\beta}$ gives an estimate of the bias corrected effect of the parameter of interest adjusted based on changes in R^2 from the controlled and uncontrolled regressions. More robust results would show little movement when compared to the controlled coefficients from OLS estimates. By this criterion, the migration by both parents and father in the specification likely lie close to zero, since the signs change against the original estimates. This is not the case for the migration by mother effect, though it still lacks a satisfactory level of significance based on the bootstrap standard errors. δ , gives a measure of how much of migration by a parent is explained by the observed variables versus those that are unobserved, assuming the treatment effect is 0. Larger values indicate more importance of the observed variables, where $\delta = 1$ indicates that observed variables are at least as important as unobserved. Therefore, across the three coefficients of main interest, unobserved (omitted) variables are still important in explaining migration by both parents and a father, but less so for migration by a mother.

5 Conclusion

This analysis explored the effects of migration by a parent on two outcomes: education and personality. Overall, the relationship of parental migration seems to have a null or even negative relation to a person's education. Maternal migration seems to have a small, negative effect in most cases, though many specifications are too noisy to find consistently significant results. The cumulative effect of the interaction with attributes such as lower income, extended family, and single fatherhood generally net any positive effect to zero. However, in the example of single

mothers migrating, the interaction between migration and family composition seems to blunt what would be an unambiguous negative effect of single motherhood. This suggests that migration for a single mother could be considered a beneficial investment for children, assuming enough social support via extended families is present.

Most literature has focused on studying the effects of parent migration on education with samples of individuals as children. By studying adults after education decisions are finalized and parental migration is “over”, it was expected that a more generalizable effect would be detected. However, the estimates for the main effects of migration were considerably noisy throughout most specifications. Considering migration as a means of investment in family resources is so widespread, these results are somewhat concerning especially since previous literature has found similar results in education, including a small negative effect of maternal migration (Lu 2014). This collection of results does complicate a picture of parental migration as a direct means of investment in childhood education, especially given the complexities of the mechanisms described. Similarly, mostly null results were found in the relationship between personality and migration by parents, with the exception of one dimension. Disruption of family structure, even migration, has been shown to affect mental health of family members, but perhaps the short-term disruption of parental migration has no long-term effects on personality. These novel results are included here as exploratory and ultimately beg more investigation.

This analysis is primarily about the conflicting mechanisms of increased income from remittances and the loss of a parent in a household. As mentioned in the robustness analysis, in using a new technique, it’s clear there are unobserved variables which contain important information for the specified models for education. A key limitation is that IFLS does not measure remittances from migrated individuals, only that they migrated previously. Measuring

where remittances are being spent would provide a fuller picture of how they are invested in the household and address the omitted variable problems discussed. Also, the length of a parent's migration is not reported and therefore is not included. If parental migration is considered a disruption for children, the length of that disruption would be a valuable input for cognitive and non-cognitive outcomes. The difference between internal and international migration is one element not strictly considered in this analysis that may provide some additional insight in subsequent research. The type of migration encodes additional attributes, such as migration cost, that are worth considering in follow-up analyses. Another limitation is the dynamic nature of some households. Extended family status, single parenthood, and income were measured at one time and level of education at a much later time. This creates an additional complication and may lead to misestimation, because family compositions or income could change significantly throughout an individual's adolescence. The use of panel methods on data such as IFLS is an opportunity to control for these time variant effects that complicate the analysis. Considering migration is such an integral part of life in Indonesia and other developing countries, this begs additional follow-ups. Education is just one outcome, and parental migration may have more outsized effects on other outcomes such as health, employment, or income.

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7 Appendix

Table A.1: Propensity Score Estimates – Education

	OLS Estimate β	Balance Score Weighted β
Migration by Both	0.078	-0.384
	[0.266]	[0.348]
Migration By Father	0.126	0.314
	[0.159]	[0.230]
Migration by mother	-0.216	-0.526
	[0.248]	[0.302]*

Notes to Table A.1: . OLS estimates are those from the “Full” model in table 4. Balance score weighted coefficients and standard errors (in parentheses) are produced from the twang R package described in (Burgette et al. 2017).

Table A.2: Selection on Unobservables Bias Estimates – Education

	Uncontrolled β	Controlled β	$\tilde{\beta}$	δ
Migration by Both	0.669**	0.078	-1.745	0.079
	(0.279)	(0.220)	[0.515]**	[0.148]
Migration By Father	0.423**	0.126	-1.121	0.129
	(0.167)	(0.144)	[0.302]**	[0.104]
Migration by mother	-0.170	-0.218	-0.4955	-0.49
	(0.256)	(0.225)	[10.737]	[3.918]

Notes to Table A.2: Controlled and uncontrolled β correspond to the initial and full model in Table 4 respectively. $\tilde{\beta}$, δ , and bootstrap standard errors are estimated from the procedure described in (Oster 2019) via psacalc Stata package (Oster 2016)

Table A.3: OLS Estimates – Education Full

	(1)	(2)	(3)	(4)
Migration By Both Parents	0.669** (0.279)	0.192 (0.222)	0.137 (0.222)	0.078 (0.220)
Migration By Father	0.423** (0.167)	0.184 (0.144)	0.134 (0.144)	0.126 (0.144)
Migration By Mother	-0.170 (0.256)	-0.311 (0.223)	-0.223 (0.226)	-0.218 (0.225)
Female	0.153** (0.063)	0.185*** (0.057)	0.190*** (0.057)	0.207*** (0.056)
Age	-0.399*** (0.031)	-0.142*** (0.029)	-0.118*** (0.030)	-0.147*** (0.029)
Age Squared	0.026 (0.033)	-0.028 (0.030)	-0.041 (0.030)	-0.039 (0.030)
Mother's Ed. - Missing		0.515*** (0.116)	0.410*** (0.127)	0.313** (0.125)
Mother's Ed. - Elementary		0.898*** (0.074)	0.874*** (0.074)	0.787*** (0.073)
Mother's Ed. Junior Secondary		2.806*** (0.114)	2.770*** (0.114)	2.568*** (0.114)
Mother's Ed. Senior Secondary		4.297*** (0.133)	4.260*** (0.133)	3.967*** (0.133)
Mother's Ed. College +		6.599*** (0.135)	6.526*** (0.136)	6.170*** (0.137)
Extended Family			0.189*** (0.064)	0.161** (0.063)
Number of Siblings			-0.025 (0.032)	-0.035 (0.032)
Single Mother			-1.037*** (0.145)	-1.010*** (0.144)
Single Father			-0.262 (0.304)	-0.178 (0.303)
Below-Median Income				-0.828*** (0.058)
Constant	9.123*** (0.124)	7.962*** (0.127)	7.986*** (0.127)	8.487*** (0.131)
District Fixed Effects	Y	Y	Y	Y

Notes to Table A.3: All variables generated from IFLS 1-5. Robust Standard Errors reported in parentheses. Significance is given at the 1%, 5%, and 10% levels denoted by ***/**/* respectively. Migration by parent variables are indicators whose reference group is no migration by either parent.

Table A.4: Full OLS Estimates – Personality

	(1)	(2)	(3)	(4)	(5)
	Extroversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Migr. By Both Parents	-0.318 (0.203)	-0.087 (0.157)	0.255 (0.170)	0.059 (0.203)	0.039 (0.199)
Migr. By Father	-0.093 (0.114)	0.023 (0.088)	-0.033 (0.096)	0.093 (0.114)	-0.062 (0.112)
Migr. By Mother	0.240 (0.196)	-0.291* (0.152)	-0.020 (0.165)	0.155 (0.196)	0.036 (0.192)
Female	0.547*** (0.056)	-0.059 (0.043)	0.003 (0.047)	-0.403*** (0.056)	-0.340*** (0.055)
Age (years)	-0.036 (0.028)	0.064*** (0.022)	0.155*** (0.024)	0.116*** (0.028)	-0.005 (0.028)
Single	-0.150** (0.064)	0.015 (0.050)	-0.165*** (0.054)	0.015 (0.064)	0.126** (0.063)
Employed	0.108* (0.062)	0.043 (0.048)	0.218*** (0.052)	0.162*** (0.063)	0.046 (0.061)
Extended Family	0.044 (0.056)	-0.005 (0.043)	-0.018 (0.047)	-0.012 (0.056)	-0.0001 (0.055)
Num. of Siblings	-0.028 (0.027)	-0.028 (0.021)	0.044* (0.023)	-0.014 (0.027)	-0.006 (0.027)
Single Mother	-0.026 (0.125)	0.060 (0.097)	0.053 (0.105)	-0.134 (0.125)	-0.136 (0.122)
Single Father	0.378 (0.282)	-0.271 (0.219)	0.134 (0.237)	0.209 (0.283)	0.150 (0.276)
Below-median Income	-0.102** (0.052)	0.019 (0.040)	-0.024 (0.043)	-0.103** (0.052)	-0.207*** (0.050)
District Fixed Effects	Y	Y	Y	Y	Y
Observations	5,981	5,981	5,981	5,981	5,981
R ²	0.028	0.009	0.025	0.028	0.020
Residual Std. Error (df = 5941)	1.948	1.510	1.636	1.950	1.906
F Statistic (df = 39; 5941)	4.378***	1.392*	3.858***	4.344***	3.091***

Notes to Table A.4: All variables generated from IFLS 1-5. Robust Standard Errors reported in parentheses. Significance is given at the 1%, 5%, and 10% levels denoted by ***, **, * respectively. Indicator variables include Single (reference = “No”), Employed in the prev. 12 months (reference = “No”), Extended Family (reference = “No”), Single mother, Single father (reference = “No”), and Below-median Income (reference = “No”).