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Abstract

Migration is an important risk-coping mechanism for poor households in developing countries. However, migration decisions may be sub-optimal in the presence of limited commitment between spouses. In this paper, we examine the link between the distribution of power in marriage and the decision to split-migrate (one spouse migrates alone) in Indonesia. We exploit a national policy experiment that exogenously increased women's bargaining power among ethnic groups of matrilineal tradition - the couple lives with the bride's relatives - relative to patrilineal groups. The propensity of matrilineal husbands to split-migrate, relative to patrilineal husbands, increases by 2-3.4 percentage points, i.e. a rise of 41-76%, following the reform. We suggest that empowered women may have gained control ex ante over outcomes that are costlier to monitor for husbands once they migrate. Hence, empowerment restores some efficiency in migration decisions by reducing the anticipated information asymmetry and the moral hazard associated with migration. Consistently, we show that households with empowered women are more able to cushion shocks due to natural disasters and, among all households experiencing split-migration, matrilineal women are better off than their patrilineal counterparts. We provide a theoretical framework that rationalizes the intra-household mechanisms behind these intuitions.

Keywords

Migration; female empowerment; intra-household decision-making; ethnic norms; gender; natural experiment

JEL Codes

D13; J1; K38; K4; O15; R23; Z1

1 Introduction

Migration flows have sharply increased in the last decades.¹ In absence of formal insurance and credit markets, migration has become a frequent strategy for low-income households to cope with risks such as price fluctuations or natural disasters (Bertoli et al., 2022). It provides an *ex post* solution to cushion negative income shocks as well as an *ex ante* strategy to diversify future income streams and deal with uncertainty (Amuedo-Dorantes and Pozo, 2011). Yet, migration is a costly investment and frequently entails the departure of only some of the family members, often those with the highest expected returns (Rizzica, 2016). As a result, migration is characterized by a rising proportion of ‘split households’, i.e. households composed of some members who migrate and some left in the home region. Specifically in Indonesia, one of the main migrant-sending countries in Asia, the proportion of split-migrating men was 49.2% of all households with at least one migrant over the period 2000-07 and 57.6% over 2007-14.²

For couples, whether migration is joint or split is a critical aspect as it does not only influence the total resources available to the household but also affects the dynamics of risk sharing and intra-household distribution. In general, efficient household decisions require implicit agreements to be honored over time, for instance thanks to social norms or strong family ties (Chiappori and Mazzocco, 2017; Kazianga and Wahhaj, 2017). These conditions may not be sufficient in the context of split migration. A husband migrating alone must be insured by his family in the short-run and repay optimally later on. Yet, when families are separated, information asymmetries are potentially large and implicit contracts are likely to be incomplete (Ashraf et al., 2015). Beyond this intuition of potentially inefficient decisions in split households, little is known about the process leading to migration decisions and its consequences on intra-household resource distribution. Studies are also scarce on how households decide who migrates within the family. A nascent literature investigates these issues, but rarely takes into account the fact that spouses may have different views on the value of migration and different levels of bargaining power (see the discussion in Chort and Senne, 2018).³

The present paper sheds light on the link between women’s empowerment and husbands’ propensity to split migrate. We exploit a natural experiment in Indonesia, namely a series of legal reforms that have fostered women’s access to justice in 2008-10. We take advantage of ethnic heterogeneity in post-marital residency norms, namely between matrilineal settings (whereby a couple lives with the bride’s relatives) and patrilineal ones (the couple lives with

¹244 million individuals were characterized as international migrants in 2015 (i.e. a 41% increase compared to 2000 and faster than world population growth), while 763 million individuals were internal migrants within their country (UN, 2015).

²These figures are drawn from the Indonesia Family Life Survey (IFLS) used in the present study. The proportion of families declaring the migration of at least one member was 13% for 2000-07 (among which 6.4 percentage points corresponded to men’s split migration) and 12% between 2007 and 2014 (7.2 ppt for split migration).

³The migration literature has acknowledged the collective dimension of the migration decision, but mainly through the lens of remittances motives (see Rapoport and Docquier, 2006 for a review).

the groom’s family). We have previously shown that the reform has exogenously increased empowerment among women of matrilocal ethnic groups relative to their patrilocal counterparts (Bargain et al., 2020). We use this differential change in empowerment as the first stage of an IV strategy aimed at testing the role of women’s bargaining power on split migration decisions. Applied to the Indonesia Family Life Survey (IFLS), our double difference (DD) approach conveys that husbands of matrilocal ethnicities are more likely to split migrate after the reform than those from patrilocal groups. Their propensity to split migrate increases relatively by 2 – 3.4 percentage points (ppt), i.e. a rise of 41 – 76%. In line with our interpretation, no such change is found for the probability of migrating jointly. We also suggest that access to divorce may especially increase for households living far from courthouses. If it is the case, the relative increase in split-migration must be larger for matrilocal households living remotely, which is confirmed by triple difference (DDD) estimations.

The intuition behind these results is as follows. Women empowered by the reform gain control over resources that are generally costly to monitor for husbands when they migrate. Hence, in these households with empowered women, women control ex ante the resources they would benefit from in the absence of their husbands so the latter need to commit less, and there is a reduction in anticipated information asymmetries and the risk of moral hazard in migration. Net migration opportunities are thus improved for husbands and split migration is more likely. For households living in remote areas, it is plausible that they face higher migration costs and asymmetry of information in case of husbands’ migration, hence the prediction of a relatively stronger increase in split-migration for matrilocals living far from capital districts where courthouses are located. We provide a theoretical framework that rationalizes this setting and our empirical findings. We discuss migration decisions in the context of limited commitment issues for potentially migrating households and show that women’s empowerment facilitates risk coping strategies through migration.

Two corollaries can be tested to support our interpretation and are indeed confirmed by additional estimations. First, when migration is triggered by shocks, households with empowered women should be better able to absorb them through migration. We actually find that after reform, the relative increase in split migration is mainly due to matrilocal households living in villages recently exposed to natural shocks. Second, the well-being of matrilocal women should not vary much whether their husbands migrate or not (but should be higher than in patrilocal families after reform), which is also confirmed empirically.

Our paper contributes to the literature on household decision-making and migration. First, we shed some light on living arrangements in the context of low-income countries, often characterized by the inefficient nature of household decisions (see the critical survey by Baland and Ziparo 2018). Many studies focus on the effect of migration or remittances on the left behind,⁴ while these decisions are interesting per se due to their suboptimal nature: poten-

⁴For instance in Amuedo-Dorantes and Pozo (2010); Antman (2011a); Acharya and Leon-Gonzalez (2014);

tial migrants expect a misuse of their transfers by their relatives left behind and may even reconsider the choice to migrate by anticipation. Our setting suggests a similar framework to examine household negotiations about resource sharing and migration decisions.

Second, the problem of asymmetric information is also relevant for intact households making intra-household transfers (Ashraf, 2009) and studied as a broad source of inefficiency regarding long-term or irreversible decisions (Lundberg and Pollak, 2003, 2008). Yet, this issue is possibly more acute, and problematic also in the short-run, in the context of migration because (i) transfers are substantial and explicit, (ii) communication is often limited, and (iii) migrant’s preferences are not necessarily well understood (Ambler, 2015). Our results complement previous evidence on non-cooperative behavior due to information asymmetries between migrants and those left behind (Chen, 2013; Azam and Gubert, 2005; Antman, 2011b, 2015), including cases where migrants attempt to monitor their relatives (Chen, 2006; De Laet, 2014) or channel money into investments rather than family consumption (Ashraf et al., 2015), as well as situations in which migrants hide information about their income to escape redistributive pressure (see for instance McKenzie et al., 2013; Batista and Narciso, 2016; Baland et al., 2011). In this context, our results suggest an original mechanism where exogenous changes in empowerment affect risk coping and migration decisions.

Third, our findings also contribute to the group of studies exploring the determinants and nature of migration. The bulk of the literature focuses on the role of earnings (e.g. Borjas 1987; Bertoli et al. 2013; Foged 2016) and networks (e.g. Azam and Gubert 2006; McKenzie and Rapoport 2010; Chort et al. 2012). Our setting is closely related to the recent studies on migrant selection within the household. In particular, Chort and Senne (2015, 2018) show how households select migrating family members based on their income potential at destination, i.e. their remittance-generating capacity, while other studies examine the role of household composition and demographic characteristics of family members (Bratti et al., 2020). Our setting does not endogeneize which spouse is selected for migration but focuses on the most frequent situation (men’s split migration) while suggesting how husbands’ migration may be determined by women’s empowerment.⁵

The paper is structured as follows. Section 2 provides insights of the Indonesian cultural and institutional contexts. In Section 3, we suggest a simple conceptual framework to rationalize our interpretation and testable predictions. In Section 4, we describe the data and our empirical strategy. Section 5 presents the results and robustness checks. Section 6 concludes.

Bargain and Boutin (2015); Bertoli et al. (2023).

⁵Nobles and McKelvey (2015) analyze this question in the context of Mexican migrants in the US, using PROGRESA transfers as a shift in women’s bargaining power. In their case, recipient households do not only experience a shift in women’s empowerment but also a large income effect that may affect the incentives to use migration as an income-generating strategy.

2 Background on Social Norms and Legal Reforms

We first describe the reforms under study and we provide some background on traditional residence norms in Indonesia. The section ends with a summary of the differential effects of the reforms on women’s empowerment.

2.1 National Access-to-Justice Strategy: a Natural Experiment

Indonesia is characterized by an Islamic justice system in which 98% of divorces are pronounced by religious courts (the remaining cases are heard by general courts). These courts have exclusive jurisdiction over marriage-related cases in general, including divorce, property division, child custody or spousal maintenance. Women’s access to justice is positively related to gender equity developments (Alfitri, 2011), especially by making them more assertive about their right to divorce. However, these rights may be constrained by a lack of information, by the cost of court cases or by the social consequences for women who institute divorce proceedings through the formal legal system. These conclusions have been reached by the ‘Access and Equity’ study supported by the Family Court of Australia, AusAID and other stakeholders. In this context, the Indonesian government has launched the National ‘Access to Justice’ Strategy during 2008-2010, aimed at increasing access to the courts for women and disadvantaged groups (Sumner et al., 2011). Supported by AusAID, the Family Court of Australia and the World Bank, this policy comprises budgets to waive legal fees, an increased capacity for circuit courts (i.e. courts travelling to subdistricts in order to hold hearings for family law cases in rural and remote areas) and increased legal aid services and assistance to women who cannot afford lawyers.

The effect of this series of reforms has been documented in several reports, showing a significant increase in the ability of women, especially in remote areas, to access courts and exercise their rights (Sumner et al., 2011).⁶ As illustrated in Figure A1, an increase in divorce is observed around the time of the reform. Maybe more impressive is the rise in divorce cases initiated by the wives, which exceed 70% of all divorces in the recent years. Courting reforms have also helped women in case of domestic violence and to break cycles of illegal marriage, divorce or births, which prevented them to enforce their rights, for instance their entitlement to healthcare programs for themselves or their children (Sumner and Lindsey, 2011).

2.2 Traditional Residence Norms: the Indonesian Context

Post-marital residence norms have been categorized as follows: matrilocality (married couples live with or near the bride’s family), patrilocality (they live with or near the groom’s family), ambilocality (they can live with or near either spouse’s parents) and neolocality (they can set their own household, i.e. the basis of most developed nations). The rule adopted by households

⁶The number of people accessing religious courts through fee waiver (resp. circuit courts) has been multiplied by 20 (resp. 6) in 2011 compared to 2007.

traditionally varies with the ethnic group the household belongs to. We exploit the ethnic diversity, as well as the geographical dispersion of ethnic groups in Indonesia, illustrated in [Figure A2](#), to study the link between the residential norm and household behavior. In the Indonesian context, informal laws (*Adat*) shape many aspects of family life and are historically associated with ethnic differences in family-related behaviors including marriage, inheritance, land-holding and dispute resolution. Traditional residence norms are the salient part of *Adat* rules: women in groups of matrilineal tradition tend to have higher levels of autonomy ([Rammohan and Robertson, 2012](#)). In particular, we show in previous research that women originating from matrilineal ethnic groups were more responsive to the access-to-justice reform than their patrilineal counterparts ([Bargain et al., 2020](#)). More precisely, they were relatively more likely to renegotiate living conditions, which may lead to divorce or an improved situation for them and their children. Regarding divorce, this is illustrated in an event-study style using IFLS data: we regress divorce on a quadratic time trend and the matrilineal dummy interacted with years; the coefficients on interacted terms are reported in the upper graph of [Figure 1](#); a break is visible from the first year (2008) and the difference in the probability of divorce between ethnic groups further increases after the reform. In stable marriages, renegotiation means that matrilineal women were more likely to gain empowerment due to the reform. This is shown in [Bargain et al. \(2020\)](#) by a relative increase in a broad range of well-being variables (including women’s health condition, control over fertility, living standards and food expenditure, asset value or subjective questions regarding whether women control contraception and large household expenditure), summarized here with differential trends in an empowerment index averaging these different dimensions as shown in the lower graph of [Figure 1](#). Hereafter, we build on these results to conduct our empirical strategy regarding split-migration decisions.

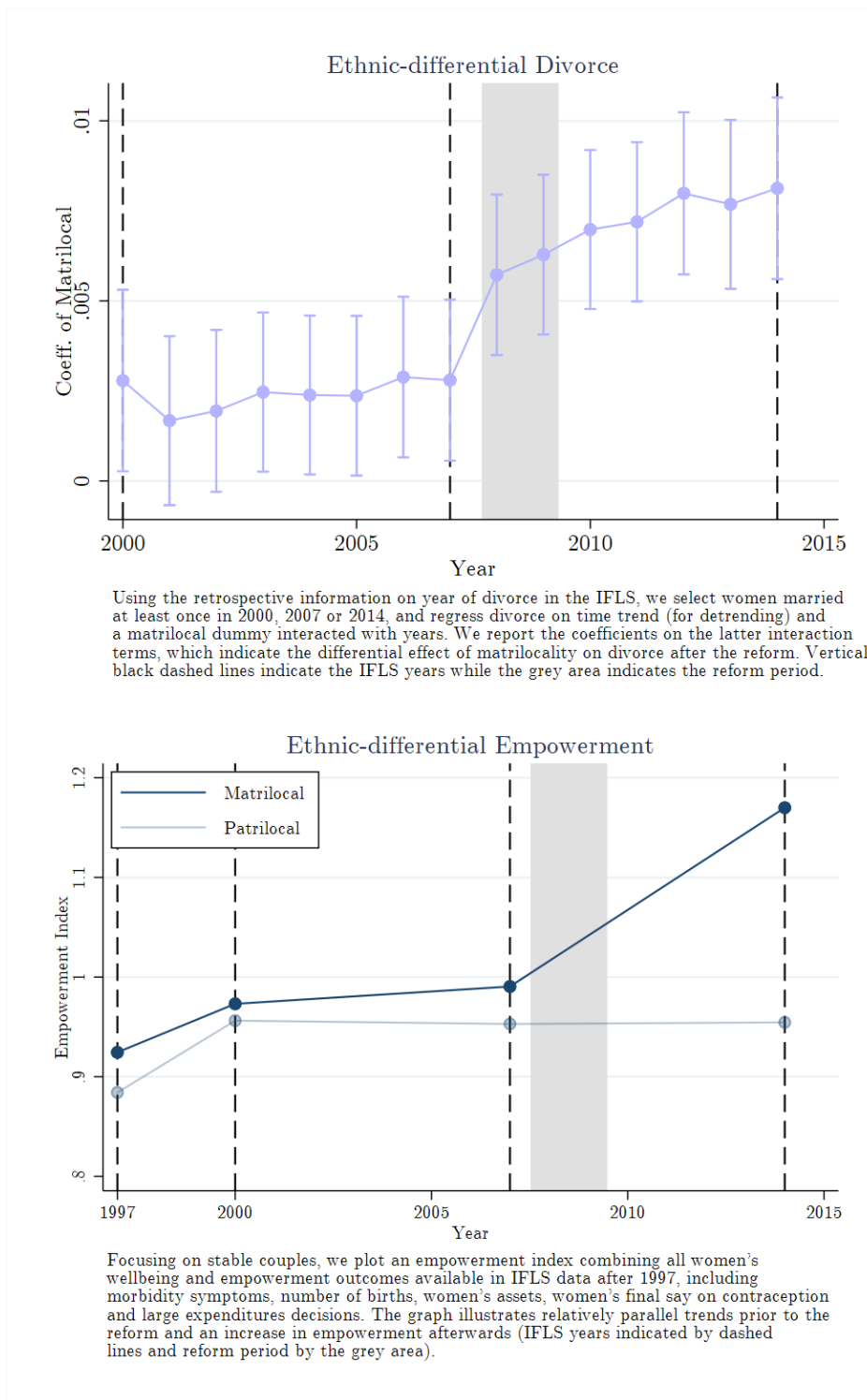
2.3 Migration in Indonesia

Indonesia is one of the biggest migrant-sending countries in Asia ([Hugo, 2009](#)), with 3.4 million international migrants in 2010.⁷ Most of this migration takes place within Asia ([IOM, 2020](#)). Internal migration is even larger, outweighing international migration with an estimated number of 9.8 million temporary migrants within Indonesia in 2010 ([Sukamdi and Mujahid, 2015](#)). Java is the most attractive island with more than 550,000 in-migrants in 2010, but has also the highest number of out-migrants (nearly a million). Further, migration in Indonesia tends to be mostly rural-urban, with internal migrants increasingly moving further away from their home. These trends are in part explained by transport and communications improvements.⁸ Importantly, the populations of South Asia, and Indonesians in particular, are particularly

⁷Data from the Migration Data Portal of the International Organization for Migration (IOM): https://migrationdataportal.org/?i=stock_abs_&t=2019

⁸The proportion of urban population has increased from 42.4% in 2000 to 48.8% in 2010, which is partly due to increased migration and to some extent to other factors such as the re-classification of rural areas as urban due to development ([Sukamdi and Mujahid, 2015](#)).

Figure 1: Differential Divorce Rates and Empowerment for Matriloal Women



vulnerable to natural disasters and climate change. Internal displacements are often triggered by such events, especially by coastal flooding and cyclonic activity [Édes et al. \(2012\)](#). In 2018, the number of new internal displaced Indonesians due to natural disasters is estimated at 853,000 ([IOM, 2020](#)).

3 Mechanisms: A Simple Theoretical Framework

We present a simple conceptual framework to elucidate why an increase in women's bargaining power may lead to an increase in their spouses' split migration. We take a representative household composed by a husband and a wife ($j = H, W$ respectively), possibly from matrilineal or patrilineal origin ($h = M, P$ respectively). They are observed for two periods: they decide about migration in the first period and consume in the second.

Preferences and Budget Constraints. Both spouses derive utility from their own private consumption c^{jh} (if alone) and the joint consumption of a public good Q^h . We write spouse j 's utility function under joint residence or split migration respectively as:

$$U_{joint}^{jh}(c^{jh}, Q^h) = u^{jh}(c^{jh}, Q^h) \quad \text{and} \quad U_{split}^{jh}(c^{jh}, x^{jh}) = u^{jh}(c^{jh}, x^{jh})$$

with x^{jh} denoting each spouse's separate contribution to the public good. When spouses live together, $Q = f^h(x^{Wh}, x^{Hh}) > x^{Wh} + x^{Hh}$ meaning that there are economies of scales of being together. Each spouse in each period is endowed with income y^{jh} . Thus, the household budget constraint in each period t (we will skip this subscript hereafter to simplify the notations) is:

$$c_t^{Hh} + x_t^{Hh} + c_t^{Wh} + x_t^{Wh} \leq y_t^{Hh} + y_t^{Wh}.$$

For the husband, i.e. the one who can migrate in our framework, income differs between the origin and the destination location. In the origin location, income is determined at the start of period 1 as follows:

$$y_{joint}^{Hh} = \bar{y}_{joint}^H + \epsilon^h$$

where \bar{y}_{joint}^{Hh} is the average income of husbands in the origin location and a random component ϵ^h distributed according to a unimodal probability density function $f()$ with mean $\nu(\epsilon^h) = 0$ and a strictly monotone cumulative distribution function $F()$. In the destination location, where husbands may go in the second stage, income is the same for all men so that: $y_{split}^{Hh} = \bar{y}_{split}^H$. Note that the distribution of marriage tastes does not depend on ethnic groups. We assume that the average income in the origin location is lower than the income of the destination location. Formally:

Assumption I: $\bar{y}_{joint}^H < \bar{y}_{split}^H$.

Consumption decisions. Inefficiency comes from the migration decision, as defined later. Within each state of the second stage, i.e. split-migration or living together, household's consumption decisions can be modeled as an efficient process (Chiappori, 1988). Thus, consumption allocations when spouses live together are represented as following the maximization of a household welfare function:

$$V_{joint}^h = \mu(p, y_{joint}^{Hh}, y_{joint}^{Wh}, \mathbf{z}_{joint})u^{Hh}(c^{Hh}, Q^h) + (1 - \mu(p, y_{joint}^{Hh}, y_{joint}^{Wh}, \mathbf{z}_{joint}))u^{Wh}(c^{Wh}, Q^h)$$

where $\mu(p, y_{joint}^{Hh}, y_{joint}^{Wh}, \mathbf{z}_{joint})$ is the Pareto weight of the husband in the couple, determined by prices, incomes and a vector of distribution factors \mathbf{z}_{joint} . When spouses opt for split migration, consumption allocations stem from the maximization of the following function:

$$V_{split}^h = \mu(p, y_{split}^{Hh}, y_{split}^{Wh}, \mathbf{z}_{split})u^{Hh}(c^{Hh}, x^{Wh} + x^{Hh}) + (1 - \mu(p, y_{split}^{Hh}, y_{split}^{Wh}, \mathbf{z}_{split}))u^{Wh}(c^{Wh}, x^{Wh} + x^{Hh}).$$

Whether the husband migrates or not, the consumption allocations in equilibrium are determined by the following optimality condition:

$$\frac{\frac{\partial u^{Hh}}{\partial c^{Hh}}}{\frac{\partial u^{Wh}}{\partial c^{Wh}}} = \frac{1 - \mu}{\mu},$$

implying that the higher the Pareto weight of one spouse, the higher his/her private consumption, given total household income. To know whether each spouse prefers split migration or to stay together, we can compare the evolution of the indirect utility of each spouse in both situations.

Migration Decision. We model location decision following [Lundberg and Pollak \(2003\)](#). Spouses must agree on whether the household opt for split-migration or not. The husband leaves only if both spouses prefer his departure. Each spouse's view regarding migration depends on the second-stage consumption allocations: split migration is possible if resource sharing make both spouses better off in migration compared with status quo. Such an allocation exists if it is financially worth to migrate (assumption I) and if economies of scale (derived from public consumption) when living together are not too large. Note that households having a financial incentive to migrate are most likely to be those who have suffered a negative income shock earlier, for example due to natural disasters, which we discuss later.

We define $v_l^{jh}(\mu_l, Y_l^h)$ the indirect utility of spouse j in location l (joint or split), where $Y_l^h = y_l^{Hh} + y_l^{Wh}$. A spouse prefers migration if $\Delta v_{split-joint}^{jh} = v^{jh}(\mu_{split}, Y_{split}^h) - v^{jh}(\mu_{joint}, Y_{joint}^h) > 0$. This difference can be written as:

$$\Delta v_{split-joint}^{jh} = \frac{\partial v^{jh}(\mu, Y^h)}{\partial \mu} \Delta \mu_{split-joint} + \frac{\partial v^{jh}(\mu, Y^h)}{\partial Y^h} \Delta Y_{split-joint}^h.$$

When the husband migrates, total household income increases, i.e. $\Delta Y_{split-joint}^h > 0$. At the same time, migration induces a change in Pareto weights, which determines the sign of $\Delta \mu_{split-joint}$.⁹ If commitment were always possible, the winning spouse could assure the other

⁹The Pareto weight is partly determined by the outside options of both husband and wife, which can be

spouse of deriving at least as much utility in migration as in the joint location – knowing that binding agreements are not possible, one spouse may block the migration decision, which implies dynamic inefficiency.¹⁰

Formally, following [Chen \(2013\)](#), we can redefine the Pareto weight in a household of type h as follows: $\mu^h = \mu^{c,h} + \tilde{\mu}^h$ where $\mu^{c,h}$ is the contractable part of the Pareto weight and $\tilde{\mu}^h$ is the less contractable one. This allows us to write the assumptions that guide our reasoning in the empirical work that follows:

Assumption II: $\Delta\mu_{split-joint}^h = -\tilde{\mu}^h$.

This means that when the husband migrates, he loses all the non-contractable part of the Pareto weight.

Assumption III: When divorce is possible, $\mu^P > \mu^M$, with $\tilde{\mu}^P > \tilde{\mu}^M$.

This means that after the reform, which increases access to divorce, the Pareto weight of husbands is larger in patrilocal settings compared to matrilocal ones ([Bargain et al., 2020](#)). The change takes place in dimensions that are costlier to monitor (less contractable), even when the husband is present.

Finally, to match the implementation of the reform, we make an additional assumption on the geographical distribution of changes in the Pareto weight.

Assumption IV: When close to the district capital, i.e. where courts are located, divorce is possible both before and after the reform, with a reduction of its cost after the reform. When far from the district capital, divorce is possible only after the reform. Formally:

$$(\mu_2^{PC} - \mu_2^{MC}) - (\mu_1^{PC} - \mu_1^{MC}) < (\mu_2^{PF} - \mu_2^{MF}) - (\mu_1^{PF} - \mu_1^{MF}),$$

with μ_t^{hk} the Pareto weight of husbands of ethnic group h at period $t = 1$ (before reform) or $t = 2$ (after reform) when leaving *close* to (C) or *far* from (F) the district capital. This assumption means that after the reform, which increases access to divorce especially for households far from the district capital, the gain in Pareto weight for husbands in patrilocal settings (compared to matrilocal ones) is larger for households far from district capitals (compared to those living close).

The model’s predictions readily derive from these assumptions. Because of the reform, matrilocal men face a worse off situation than patrilocal men. What they would have had to give away during migration before the reform (the non-contractable part, cf. Assumption II) is already broadly lost because of the reform (cf. Assumption III). Thus, migration must guarantee a smaller increase in total household income (than for patrilocal men) for them to be

divorce or a non-cooperative equilibrium in marriage ([Browning et al., 2014](#)). Migration may have a positive effect on the husband’s outside option by increasing his earning opportunities. It may also increase the control of the wife over the allocation of resources at home ([Chen, 2013](#); [De Laat, 2014](#)). We remain agnostic about the sign of the change in Pareto weights.

¹⁰Commitment seems more feasible, but not necessarily credible, when the winning spouse is the husband, as he can commit to transferring resources to the wife on a regular basis. It seems more difficult if it is the wife, as the allocation of resources in the household is not easily observed by the husband ([Chen, 2013](#); [De Laat, 2014](#)).

willing to migrate. If earning opportunities in migration are the same for both type of men (cf. Assumption I), this yields the following result:

Prediction 1. *After the reform, matrilineal men accept to migrate more often than patrilineal men.*

Prediction 2. *After the reform, the ethnic difference in migration rates is larger for households living far from the district capital.*

Testing prediction 1 (by double difference) and prediction 2 (by triple difference) is going to be the main focus of our empirical analysis. From the reasoning above, we also obtain two corollaries that can be tested along:

Prediction 3. *After the reform, the ethnic difference in migration rates is larger for households who have experienced a negative income shock.*

This means that empowering women increases the possibility of cushioning shocks through split migration. Concretely, we expect husband's split migration to be more frequent among post-reform matrilineal households that have experienced a natural disaster recently. We also expect this shock-related increase in migration to be larger in matrilineal households compared to patrilineal households, i.e. a better ability to cushion shocks among households with empowered women.

Prediction 4. *Among empowered women, there should be little difference in women's empowerment between migrating and non-migrating households.*

This is a direct consequence of the assumption that women's increased empowerment reduces the extent of information asymmetries leading to suboptimal transfers. All the proofs are in the Appendix.

4 Data and Empirical Strategy

4.1 IFLS Data

Data. The empirical analysis draws on data from the IFLS, which contains extensive socioeconomic data at the individual level (including information on individuals' ethnicity, and marital history) and at household level (including household composition) as well as village-level information. Notably, the ethnic composition and prevalent kinship norms (including inheritance and post-marital residence norms) at the village level are provided by *Adat* experts or community leaders. The IFLS is based on an initial sample representing about 83% of the Indonesian population living in 13 of the 27 Indonesian provinces in 1993. Extensive efforts were provided to track respondents when collecting the data in each of the five waves (1993, 1997, 2000, 2007

and 2014): 92% of the households are still in the database in the last wave (Strauss et al., 2016).

Selection. Our analysis focus on the 2007 and 2014 waves, the years surrounding the Access-to-Justice reforms (2008-10). We exclude polygamous households and those in which spouses originate from two different ethnic groups when these groups correspond to different post-marital residence norms. Migration decisions are recorded as family members migrating between two waves of the IFLS. In our main analysis, we consider husbands' split migration between 2000-2007 (pre-reform), with potential migration recorded in 2007, and migration between 2007-2014 (post-reform). By construction, we focus on stable couples, i.e. married in both 2000 and 2007 or in both 2007 and 2014 (for parallel trend checks, we use stable couples for the periods 1993-2000 and 2000-2007). This approach based on pooled cross-sections is our favorite one because using the panel structure of the IFLS implies an aging of the sample, which necessarily limits the interpretation of the results. Nonetheless, as a robustness check, we also exploit the panel dimension to control for household fixed effects and, for this, select couples that are stable over the whole period 2000 to 2014 (and for placebo checks, stable couples over 1993-2007).

Outcome. Our main outcome variable is a dummy for husband split-migration. This variable recorded in 2014 indicates whether the husband has migrated without his wife since the preceding wave of the survey, i.e. between 2007 and 2014. Note that for husbands who leave home in late 2007 or early 2008, and are still registered as migrants in 2014, we cannot attribute their departure to the reform, so they tend to dilute our effect slightly, i.e. the latter can be considered a lower bound.

Treatment. We aim to exploit the exogenous change in bargaining power induced by the reform. Hence, we directly use as treatment variable the household's norm of post-marriage residence, i.e. whether the couple's ethnic group is from patrilocal or matrilocality heritage.¹¹ The traditional norm of each ethnicity is not known: we proxy it in a way that is consistent with IFLS data and the Indonesian context, following Buttenheim and Nobles (2009) and Bargain et al. (2020). We use the *Adat* experts' answers about traditional residency norms in each village; we also categorize villages according to their main ethnicity; in this way, we approximate the distribution of residency norms by ethnic group. We retain the modal answer, which is systematically matrilocality or patrilocality (rather than neolocality or ambilocality), as reported in Table A1.¹² We obtain a proportion of about 83% (17%) individuals with a matrilocality (patrilocal) ethnic heritage.

¹¹We refrain from using households' *actual* post-marital residence decisions for two reasons. First, actual arrangements may be highly correlated with the couple's unobserved heterogeneity (including women's intrinsic bargaining power) and, hence, reflect more than what the norm entails. Second, empowerment is not only affected by the fact that one lives with her relatives or her partner's relatives. Ancestral residence norms are a salient feature of ethnic heterogeneity in many dimensions of gender rights and roles.

¹²We find similar results when using an alternative match between ethnicities and norms based on the Ethnographic Atlas (as in Bau, 2021; Ashraf et al., 2020). Using the Atlas' information about ancestral norms of residence in first years of marriage, we find the exact same norm for 14 of the 17 ethnic groups as in our matching strategy, which represent 93% of the sample in terms of population.

Additional information. For control variables and heterogeneity analyses, we mobilize a range of household characteristics including spouses’ age, education, labor market status, religion, as well as geographical information. Notably, we record whether households live far from a district capital, i.e. where courthouses are located. For each household, we identify the nearest district capital and define it as ‘far’ when then the household’s village is located in the second or third tertiles of the distribution of IFLS village distances to district capitals.¹³ We also create a dummy for ‘natural disaster’. It takes a value of 1 if the household lives in a village that has experienced a severe shock in the 5 years preceding the survey. We will also check the results of estimations with female and child outcomes as dependent variables, including work (female labor participation dummy), women’s living standards and food consumption, child outcomes (living standards, food consumption, healthcare, education, health) and child investment (school attendance, school hours, child labor).

Descriptive Statistics. Statistics for couples from matrilineal and patrilineal ethnic traditions are reported in [Table A2](#) for both 2007 and 2014. We first report the rate of husbands’ split migration. The raw difference-in-difference calculation in the last column points to a significant effect of around 2 percentage points, which corresponds to an increase in split migration of 42% compared to the patrilineal rate before reform. As we will see, this result is close to what we obtain later on in a more complete difference-in-difference (DD) model controlling for individual characteristics. The rest of the table describes these characteristics, denoted X_{it} hereafter, which socio-demographic variables (age, education, rural and religion) and some additional controls for triple-difference (DDD) estimations (distance to district capitals and occurrence of natural disasters) and robustness checks (e.g. Javanese ethnicity). Arguably, women of ethnic matrilineal customs are more often urban and muslim, and are less likely to work, than their patrilineal counterparts. These differences seem to be broadly constant over time, as verified in the last column, so that DD results cannot be attributed to a change in matrilineals’ characteristics. Moreover, our estimations will control for characteristics X_{it} as well as for their differentiated effect over time, in order to rule out alternative interpretations of the results.

4.2 Empirical Strategy

Main Estimation. We study the effect of an exogenous increase in women’s empowerment within marriage on men’s split migration, i.e. test Prediction 1, by estimating the following model:

$$m_{it} = \alpha + \beta Post_t \times Matrilineal_i + Z_{it} + \epsilon_{it} \quad (1)$$

$$\text{with } Z_{it} = \rho Post_t + \lambda Matrilineal_i + \phi X_{it} + \psi Post_t \times X_{it}$$

¹³We use the GPS coordinates of each household’s village and the GPS locations of all the courthouses in Indonesia, which are scrapped from the Open Street Map database (using the Overpass API).

where m_{it} is a dummy variable taking value 1 if household i reports that the husband has migrated alone between IFLS waves $t - 1$ and t . Our main estimation is a DD with observations for years $t = 2007, 2014$ (while parallel trends are checked with estimations for $t = 2000, 2007$). The variable $Post_t$ is equal to 1 if the household is observed after the Access-to-Justice reform (i.e. in year 2014) and 0 for the base period (year 2007). The variable X_{it} is a vector of controls that include religion (muslim dummy), education (university degree dummy), work, rural area and age groups dummies (using 5-year steps). The main treatment variable is $Matrilocal_i$, equal to 1 (0) if the woman's ethnic group is traditionally matrilocal (patrilocal). As extensively discussed, it is suggested as a reduced-form proxy of the renegotiation outcome taking place in stable couples following the reform and materialized as an increase in women's empowerment and autonomy (Bargain et al., 2020). Since it is not a direct measure of (additional) empowerment, our estimate β can be seen as an intention to treat (ITT).

Prediction 2 of the model states that the increase in migration of matrilocal men compared to patrilocal men is stronger when households are far from the district capital. To test this prediction, we estimate the following variant of Equation 1 that introduces heterogeneous effects:

$$m_{it} = \alpha + \beta_1^D Post_t \times Matrilocal_i \times Far_i + \beta_0^D Post_t \times Matrilocal_i \times (1 - Far_i) + \delta Post_t \times Patrilocal_i \times Far_i + \eta Far_i + Z_{it} + \epsilon_{it} \quad (2)$$

In this specification, Far_i is the dummy variable indicating if a household lives in village located far from its district capital before the reform. Comparing β_1^D and β_0^D allows us to test if among empowered women, i.e. matrilocal women observed after the reform, the migration response is stronger for households far from the district capital. Comparing β_1^D and δ also allows checking if our first result, i.e. more frequent migration among matrilocal couples compare to patrilocals after reform, holds in particular among households far from the district capital. Finally, we will check if $\beta_1^D - \delta > \beta_0^D$ (noticing that the three coefficients are relative to the reference group, i.e. $Post \times Patrilocal \times Far$), which should tell us whether this ethnic difference in the change in split migration is larger for households living far from their district capital compared to those close.

Mechanisms. We are interested in the risk-coping function of migration in relation with the balance of power in Indonesian couples. We want to test whether households with more empowered women are also more able to react to shocks via increased male migration (Prediction 3). To answer this question, we estimate the following variant of Equation 2 that studies heterogeneous effects with respect to natural disasters:

$$m_{it} = \alpha + \beta_1^D Post_t \times Matrilocal_i \times Disaster_{it} + \beta_0^D Post_t \times Matrilocal_i \times (1 - Disaster_{it}) + \delta Post_t \times Patrilocal_i \times Disaster_{it} + \eta Disaster_{it} + Z_{it} + \epsilon_{it} \quad (3)$$

In this specification, $Disaster_{it}$ is the dummy variable indicating if a household has experienced a natural disaster in the 5 years preceding the survey. Comparing β_1^D and β_0^D allows us to test if among empowered women, i.e. matrilocal women observed after the reform, the migration response is caused by a climate shock. Comparing β_1^D and δ allows checking if our first result, i.e. more frequent migration among matrilocal couples compare to patrilocals after reform, holds in particular among households affected by a natural disaster and in need of external income sources. Finally, we check if $\beta_1^D - \delta > \beta_0^D$ (noting that the three coefficients are relative to the reference group, i.e. $Post \times Patrilocal \times NoDisaster$). It should tell us whether the ethnic differential in split-migration is stronger after a natural shocks, i.e. if households with empowered women are more able to cushion the shock arising from natural disasters through split-migration compared to patrilocal households.

We can also investigate the dynamics of women’s outcomes y_{it} (i.e. empowerment and well-being) in relation with the reform and migration choices (Prediction 4). We estimate the following equation:

$$y_{it} = \alpha + \beta_1^m Post_t \times Matrilocal_i \times m_{it+} + \beta_0^m Post_t \times Matrilocal_i \times (1 - m_{it}) + \delta Post_t \times Patrilocal_i \times m_{it} + \eta m_{it} + Z_{it} + \epsilon_{it} \quad (4)$$

with Z_{it} as above. The outcome variable y_{it} represents several indicator of women’s and children’s well-being in household i at time t . Among empowered women (i.e. matrilocal groups after the reform), there should not be much difference between those who split migrate ($m_{it}=1$) and those who do not ($m_{it}=0$) if empowerment reduces the extent of information asymmetries leading to suboptimal transfers. We can also check that among households experiencing split migration, empowered women are better off than patrilocal women after the reform (i.e. β_1^m larger than δ). Even though we are aware that selection into migration is endogenous (as it varies with matrilocal status and the matrilocals’ response to the reform), this model aims to provide suggestive evidence on the potential mechanisms linking migration and intra-household decision making.

5 Results

5.1 Main Results on Split-Migration

Baseline results. Table 1 reports the effect of belonging to a matrilocal ethnic group after the reform on split-migration, i.e. the estimates of β in equation (1) aimed to test Prediction 1. The first column reports the raw DD estimate that was previously discussed when looking at descriptive statistics. The second model controls for X_{it} and the third for both X_{it} and $Post_t \times X_{it}$ to account for potentially confounding dynamics. All three models convey a significant DD estimate of similar magnitude across specifications, i.e. the split migration rate increases by 2 – 2.3 percentage points among couples of matrilocal tradition. Relative effects are also

reported, namely the estimates divided by the control group mean outcome prior to the reform: split migration increases by 42–48% (across models) among families of matrilineal ethnic groups after the reform relative to this backdrop. In the next models, we control for additional ethnic and geographical indications. Javanese represent the main ethnic group and account for 56.5% of matrilineal individuals in our sample. Accounting for a Javanese dummy and its interaction with time does not alter the results. We control for rural but to be more precise and rule out any interpretations related to where matrilineal households live, we additionally control for a dummy capturing whether the household is close to a district capital, which is where courthouses are located. The estimate increases but our conclusions are qualitatively unchanged. Very similar results are obtained when using the exact distance to the nearest courthouse for each household (unreported). We also account for whether the household has experienced a natural disaster and its interaction with time. The final model includes all the controls simultaneously. Overall, the effect of women’s empowerment in post-reform matrilineal households on the probability of men’s split migration ranges from 2 to 3.4 ppt (42 – 76%).

Robustness checks. We suggest several important checks. First, [Table A3](#) shows the results of placebo estimations using 2000-2007 data. The double difference is not significant over this period, confirming that the parallel trend assumption is verified before the reform. Second, results above are confirmed using the panel structure of the database. [Table A4](#) presents estimates in which household fixed-effect are included. As noted, this sample is stable over time and, consequently, is 7 years older in 2014 compared to the pre-reform observations. In that sense, we can expect that migration behavior change in a way that relates to household aging. Nonetheless, the treatment effect remains significant across the different models. The order of magnitude is also similar to our baseline, with estimates ranging from 1.8 to 4.6 ppt across specifications (42 – 102% in relative terms). The common trend assumption is also verified for pre-reform years, as reported in [Table A5](#). Finally, to understand whether changes in migration patterns are specific to the split migration phenomenon, as we argue, or can be generalized to joint migration decisions, we estimate equation (1) using a dummy for *joint migration* as dependent variable (equal to 1 if the household reports a joint migration of both wife and husband since the previous IFLS wave). Results are presented in [Table A6](#). There is no sign of a systematic and significant change in joint migration patterns among matrilineal households following the reform. This result conveys that the empowerment of matrilineal women due to the reform is not associated with an *overall* migration effect but only with an increase in husbands’ split migration.

Interpretation. In line with our theoretical framework, previous results convey that a relative increase in husbands’ split migration takes place in households where women are empowered thanks to the reform, namely families of matrilineal tradition. The role of empowerment can be explained by the fact that more empowered women have gained control *ex ante* over outcomes that are costlier to monitor for husbands in case they migrate (i.e. non-contractable outcomes).

Table 1: Difference-in-difference Estimations on Husband’s Split Migration

	Husband’s Split Migration						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post	-0.006 (0.007)	-0.008 (0.008)	-0.019** (0.009)	-0.021** (0.009)	-0.002 (0.014)	-0.022 (0.015)	-0.011 (0.017)
Post × Matriloc	0.020** (0.008)	0.021** (0.008)	0.023** (0.010)	0.023** (0.011)	0.031*** (0.011)	0.034*** (0.011)	0.031** (0.012)
Matrilocal	-0.010 (0.008)	-0.019** (0.009)	-0.020** (0.009)	-0.027*** (0.010)	-0.020* (0.012)	-0.021* (0.012)	-0.029** (0.013)
Relative effect	41.9%	44.4%	48.1%	47.9%	71.4%	76.1%	70%
Observations	13,939	13,682	13,682	13,682	10,068	9,881	9,665
R-squared	0.001	0.011	0.012	0.013	0.017	0.016	0.018
Clusters	320	320	320	320	317	318	317
T-Test Equal. (p-val.)	0.088	0.066	0.001	0.000	0.050	0.001	0.025
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Post × Controls			Yes	Yes	Yes	Yes	Yes
Javanese				Yes			Yes
Post × Javanese				Yes			Yes
Close					Yes		Yes
Post × Close					Yes		Yes
Disaster						Yes	Yes
Post × Disaster						Yes	Yes

Difference-in-difference estimations of husband’s split migration on a sample of women in stable couples in 2007-2014 and surveyed in 2014, pooled with a sample of women in stable couples in 2000-2007 and surveyed in 2007. The outcome is a dummy variable indicating the husband’s split migration since the preceding wave of the survey (i.e. since 2007 when surveyed in 2014, etc.). Post is equal to 1 for 2014 (post-reform) and 0 for 2007 (pre-reform). ‘Controls’ include a dummy indicating Muslim individuals; a dummy indicating individuals holding a university degree; a dummy indicating individuals being currently working; a dummy indicating individuals currently living in a rural area; and age groups dummies (using 5-years steps). ‘Javanese’ is a dummy indicating individuals of Javanese ethnicity. ‘Close’ is a dummy indicating individuals living in 2007 in a village located close to the district capital (i.e. below the 2nd tertile of distance). ‘Disaster’ is a dummy indicating individuals living in a village having experienced a natural disaster in the 5 years preceding the survey. The relative effect is calculated in % of mean outcome for patriloc group in 2007 (pre-reform). We report the p-values of T-Test of ‘Post’ = ‘Post × Matriloc.’ Standard errors are reported in brackets and clustered at village of origin level. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

As recalled in the introduction, the recent literature on migration point to non-cooperative behavior due to information asymmetry and limited commitment in split-migration families. Left-behind relatives (often the wife) tend to over-invest in goods that are favorable to them but not observable by the migrant (often the husband), as shown for instance in [Chen \(2013\)](#). If increased power guarantees that women already control this type of resources, then anticipated asymmetry of information and the risk of moral hazard in migration are reduced. As a result, husbands’ migration opportunities are improved and split migration is more likely to occur.

Distance to district capital and migration. We can also test the heterogeneous results suggested by Prediction 2. Namely, matriloc women living in remote areas presumably benefit more from the reform so split-migration increases relatively more in this group. We estimate [Equation 2](#) and present the results in [Table 2](#). We see that among all subgroups represented by

interaction terms, the increased likelihood of husband’s split migration is indeed the largest in couples with empowered women, i.e. post-reform matrilocals, living far from capital districts. For them, the rate of split migration increases by around 3.6 – 4.4 ppt (i.e. 75% – 92% relative to pre-reform patrilocals and 120% – 145% relative to pre-reform patrilocals living far, given the low split-migration rate before reform in this group). In matrilocal households living close to their district capital, the effect is roughly half of it, i.e. around 1.8 – 2.5 ppt (i.e. 37% – 52% relative to pre-reform patrilocals). We report the p-values of different t-tests based on relative effects, bearing in mind that coefficients are interpreted relative to the omitted Post group (patrilocals living close). They tend to confirm that that households with empowered women have stronger incentives to send their husbands in split-migration when they live far from their district capital.

5.2 Tests to Corroborate Mechanisms

As discussed in the theoretical framework and the empirical strategy, two consequences derive from the suggested mechanism and can be tested. First, households with empowered women should be more able to active split migration as a risk-coping strategy against natural disasters. Second, their position in marriage should not vary much whether the husband migrates or not (but should be higher than in patrilocal families after reform). We test these predictions in turn.

Exposure to natural shocks and migration. As presented before, Indonesia is particular vulnerable to natural disasters. Climate events are a major cause of internal and external migration. We confirm that these are frequent events using the IFLS data: among matrilocal women observed after the reform, around half of them live in a village that has experienced a natural shock in the past 5 years (see [Table A2](#)). We then test Prediction 3 by estimating the empirical model of equation (3). Estimates are presented in [Table 3](#). We see that the increased likelihood of husbands’ split migration in couples with empowered women (post-reform matrilocals) is essentially driven by those experiencing a natural disaster. This is in line with previous intuitions: climate shocks are a major source of migration in Indonesia and, according to our conjecture, empowered women are more likely to be able to initiate split migration to cushion this type of shock. For them, the rate of split migration significantly increases by around 4.0 – 4.8 ppt relative to pre-reform patrilocals. In matrilocal households not recently exposed to natural disasters, the effect is smaller (i.e. around 1.0 – 1.6), not significant, and possibly reflecting other (and less important) shocks.¹⁴ We report the p-values of different t-tests. The first one confirms that among matrilocal women, split migration is significantly more frequent in households affected by a shock. The second conveys that our

¹⁴We check that the absence of a significant increase in split-migration for the latter group is not due to a differential impact of the reform across matrilocal women depending on the regions where they live in terms of climate shocks.

main result, i.e. matrilocals split-migrate more than patrilocals, is valid within the group of households experiencing a natural disaster. The third one checks that this result, the ethnic difference, is larger in case of a natural disaster (we bear in mind that the reported coefficients are relative to $Post \times Patrilocal \times NoDisaster$). This last result conveys that households with empowered women are significantly more able to cushion natural shocks via split-migration.

Empowerment and migration. The other corollary of our interpretation of the possible intra-household mechanisms pertains to the empowerment level and living conditions of women after the reform, as established in Prediction 4. Namely, matriloal women should be better off than patrilocal women when husbands migrate – but not better off than non-migrating matriloal women – because matriloal women in general have already gained access to the resources that would otherwise be source of inefficiency in the migration decision. In [Table 4](#), we provide estimates using a variety of outcomes including women’s autonomy (using final say variables regarding contraception and large household expenditures), well-being (standard of living, food consumption, healthcare and perception of family life) and child outcomes (food consumption, healthcare, education). We report three types of heterogeneous effects combining residency norm and split migration, as laid out in equation (4). Among matriloal women observed after the reform, we see only small differences between those with a migrating husbands and those without. Report p-values of the corresponding t-test show that we cannot reject equality of the coefficients for 7 out of the 9 outcomes. We also confirm that matriloal women are better off than patrilocal women for a majority of outcomes (we reject equality of coefficients for 5 outcomes), among split-migrating families. These results are indicative, given the endogeneity of migration, but comfort our interpretation that empowered women have already gained control over the resources that typically lead to suboptimal migration behavior.

Table 2: DDD Estimations on Husband’s Split Migration - Heterogeneity by Distance to District Capital

	Husband’s Split Migration					
	(1)	(2)	(3)	(4)	(5)	(6)
Post × Matri. × Far	0.036*** (0.011)	0.036*** (0.012)	0.044*** (0.014)	0.044*** (0.015)	0.044*** (0.015)	0.043*** (0.015)
Post × Matri. × Close	0.018 (0.011)	0.020* (0.011)	0.025** (0.011)	0.025** (0.012)	0.024** (0.012)	0.023* (0.013)
Post × Patri. × Far	-0.002 (0.015)	0.001 (0.014)	0.003 (0.016)	0.003 (0.016)	0.000 (0.015)	0.001 (0.015)
Observations	10,250	10,068	10,068	10,068	9,665	9,665
R-squared	0.002	0.016	0.017	0.018	0.017	0.019
Clusters	317	317	317	317	317	317
T-Tests (p-values):						
P×M×F= P×M×C	0.00	0.01	0.01	0.01	0.01	0.01
P×M×F = P×P×F	0.01	0.01	0.01	0.02	0.01	0.02
P×M×F - P×P×F = P×M×C	0.08	0.11	0.10	0.11	0.06	0.07
Controls		Yes	Yes	Yes	Yes	Yes
Post × Controls			Yes	Yes	Yes	Yes
Javanese				Yes		Yes
Post × Javanese				Yes		Yes
Disaster					Yes	Yes
Post × Disaster					Yes	Yes

Triple-difference estimations of husband’s split migration on a sample of women in stable couples in 2007-2014 and surveyed in 2014, pooled with a sample of women in stable couples in 2000-2007 and surveyed in 2007. The outcome is a dummy variable indicating the husband’s split migration since the preceding wave of the survey (i.e. since 2007 when surveyed in 2014, etc.). Post is equal to 1 for 2014 (post-reform) and 0 for 2007 (pre-reform). ‘Far’ is a dummy indicating individuals living in a village located further than the second tertile of IFLS villages distance to district capital. ‘Close’ is a dummy indicating the opposite. ‘Matri’ (‘Patri’) is a dummy indicating individuals of matrilocal (patrilocal) ethnicity . Other variables are described in [Table 1](#). We control for dummies ‘Post’, ‘Far’ and ‘Matri’ in all our regressions in this table. We report the p-values of tests related to Prediction 2 and based on the relative effects of being in specific subgroups (for instance P×M×F standing for Post × Matrilocal × Far) on split migration, with P denoting post-reform, M matrilocal, P patrilocal, F far and C close. Standard errors are reported in brackets and clustered at village of origin level. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table 3: DDD Estimations on Husband's Split Migration - Heterogeneity by Natural Disaster

	Husband's Split Migration					
	(1)	(2)	(3)	(4)	(5)	(6)
Post × Matri. × Disaster	0.041*** (0.011)	0.040*** (0.011)	0.048*** (0.013)	0.048*** (0.013)	0.048*** (0.013)	0.047*** (0.014)
Post × Matri. × No Disaster	0.011 (0.014)	0.014 (0.013)	0.018 (0.014)	0.016 (0.015)	0.015 (0.014)	0.012 (0.015)
Post × Patri. × Disaster	-0.020 (0.017)	-0.015 (0.015)	-0.018 (0.015)	-0.021 (0.015)	-0.021 (0.015)	-0.024 (0.015)
Observations	10,059	9,881	9,881	9,881	9,665	9,665
R-squared	0.002	0.015	0.016	0.018	0.018	0.019
Clusters	318	318	318	318	317	317
T-Tests (p-values):						
P×M×D = P×M×ND	0.01	0.01	0.00	0.00	0.00	0.00
P×M×D = P×P×D	0.01	0.01	0.01	0.00	0.00	0.00
P×M×D - P×P×D = P×M×ND	0.05	0.06	0.04	0.02	0.03	0.02
Controls		Yes	Yes	Yes	Yes	Yes
Post × Controls			Yes	Yes	Yes	Yes
Javanese				Yes		Yes
Post × Javanese				Yes		Yes
Close					Yes	Yes
Post × Close					Yes	Yes

Triple-difference estimations of husband's split migration on a sample of women in stable couples in 2007-2014 and surveyed in 2014, pooled with a sample of women in stable couples in 2000-2007 and surveyed in 2007. The outcome is a dummy variable indicating the husband's split migration since the preceding wave of the survey (i.e. since 2007 when surveyed in 2014, etc.). Post is equal to 1 for 2014 (post-reform) and 0 for 2007 (pre-reform). 'Disaster' is a dummy indicating individuals living in a village having experienced a natural disaster in the 5 years preceding the survey. 'Matri' ('Patri') is a dummy indicating individuals of matrilineal (patrilineal) ethnicity. Other variables are described in Table 1. We control for Post, Disaster and Matri in all our regressions in this table. We report the p-values of tests related to Prediction 3 and based on relative effects of being in specific subgroups (for instance P×M×D standing for Post × Matrilineal × Disaster) on split migration, with P denoting post-reform, M matrilineal, P patrilineal, D experiencing a natural disaster (ND the opposite). Standard errors are reported in brackets and clustered at village of origin level. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table 4: DD Estimations on Female and Child Outcomes - Heterogeneity by Migration Decision

	Large Exp.	Contra.	Living std.	Food	Health.	Family life	Child food	Child health.	Child school.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post × Matri. × Mig.	0.111* (0.061)	0.130* (0.072)	0.247** (0.106)	0.372*** (0.104)	0.384*** (0.102)	0.240*** (0.092)	0.252* (0.138)	0.263** (0.117)	4.161** (1.770)
Post × Matri. × No Mig.	0.047*** (0.018)	0.097*** (0.024)	0.171*** (0.045)	0.171*** (0.046)	0.197*** (0.048)	0.170*** (0.043)	0.173*** (0.049)	0.196*** (0.057)	3.571*** (0.830)
Post × Patri. × Mig.	-0.043 (0.056)	-0.076 (0.071)	-0.149 (0.096)	-0.270*** (0.096)	-0.234** (0.093)	-0.134* (0.077)	-0.119 (0.117)	-0.106 (0.101)	-1.196 (1.838)
Observations	12,942	12,942	13,453	13,453	13,446	13,454	8,775	8,774	9,928
R-squared	0.052	0.057	0.060	0.069	0.064	0.057	0.087	0.076	0.088
Clusters	320	320	320	320	320	320	319	319	320
T-tests (p-values):									
P×M×Mig = P×M×NoMig	0.29	0.66	0.42	0.03	0.04	0.37	0.50	0.47	0.74
P×M×Mig = P×P×Mig	0.16	0.12	0.04	0.00	0.00	0.02	0.13	0.07	0.11
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Post × Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Linear estimations on a sample of women in stable couples in 2007-2014 and surveyed in 2014, pooled with a sample of women in stable couples in 2000-2007 and surveyed in 2007. Dependent variables include: final say variables regarding large household expenditures ('LargeExp.') and contraception ('Contra.'). subjective well-being variables regarding the wife's standard of living ('Living std.'). food consumption ('Food'), healthcare ('Health') and family life, her perception regarding children's food consumption ('Child food') and healthcare ('Child health.'). and children education ('Child school') as the number of effective school hours attended by her children on average last week. Post is equal to 1 for 2014 (post-reform) and 0 for 2007 (pre-reform). 'Mig' is a dummy indicating women with husband having split migrated since last survey (i.e. in last 7 years), while 'No Mig.' is a dummy indicating the opposite. We control for dummies 'Post', 'Matrilocal' and 'Mig' in all our regressions in this table. Other variables are described in Table 1. We report the p-values of tests related to Prediction 4 and based on the relative effects of being in specific subgroups (for instance P×M×Mig standing for Post × Matrilocal × Migration) on split migration, with P denoting post-reform, M matrilocal, P patrilocal, Mig split-migration, and NoMig no migration. Standard errors are reported in brackets and clustered at village of origin level. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

6 Conclusions

In this paper, we have explored how women’s empowerment may foster the migration of husbands alone (split migration). This question is rarely explored due to the potential presence of unobserved variables that may affect both husband’s attitudes toward women and their propensity to split migrate. To deal with this endogeneity issue, we exploit an exogenous improvement in women’s position in marriage driven by a legal reform in Indonesia. This policy, which eases women’s access to justice and facilitates divorce, benefits especially to women from matrilineal ethnic groups who tend to experience a gain in empowerment and well-being. The present paper shows that relative to patrilineal families, matrilineal families are also concerned by a relative increase in husbands’ split migration. Difference-in-differences estimations point to a sizable effect, i.e. a relative increase in split migration rates by 2-3.4 percentage points (or 41-76%) relative to pre-reform patrilineal households. The effect is even larger in triple differences when we focus on households living remotely and with less access to courts and ability to divorce before the reform.

We suggest a theoretical framework that attempt to shed some light on the main mechanisms explaining this result. The role of empowerment can be explained by the fact that more empowered women may have *ex-ante* gained control over outcomes that are costlier to monitor for husbands (in case they migrate), so the anticipated asymmetry of information and risks of moral hazard in migration are reduced for them. As a result, husbands’ opportunity costs of migrating are lower and split migration is more likely to occur among these matrilineal couples. This interpretation is corroborated by the fact that empowerment and well-being for matrilineal women do not vary much with whether the household split-migrates or not. We also find stronger effect for matrilineal households living in remote areas, which is consistent larger migration costs before the reform. Finally, women’s empowerment through the reform allows restoring some efficiency: it increases the possibility to cushion shocks through migration strategies, which is consistent with heterogeneous analyses where the effects are larger for post-reform matrilineals experiencing natural disasters.

Further work should expand these results and test the role of empowerment in other settings. As motivated in the introduction, migration is historically rooted and widespread as a relevant strategy to cope with adverse shocks in poor households around the world. It has potential numerous benefits for populations left behind and in contexts where financial institutions and credit markets are lacking. However, the circumstances in which migration can operate in an efficient way and maximize the well-being of both migrants and their families are still broadly unknown. Inefficiency due to information asymmetry is well documented but the intra-household mechanisms driving migration choices are complex. We hope that the present paper contributes to improve our knowledge gap in this respect. Moreover, it connects to another nascent literature, which examines how cultural norms may interact with development and gender policies. Recent papers indeed show how educational programs ([Ashraf et al.](#),

2020), wealth transmission policies (La Ferrara and Milazzo, 2017) or legal reforms (Bargain et al., 2020) compound with traditional norms in a way that make them effective only for some segments of the population. The present paper additionally shows that the ability to use migration as an income-generating and diversification device also depends on the cultural, often ethnic context. Precisely, understanding how different family structures – with different traditional norms and different balances of power – shape migration implicit contracts within households, and subsequently drive self-selection patterns into migration, is a promising avenue of research.

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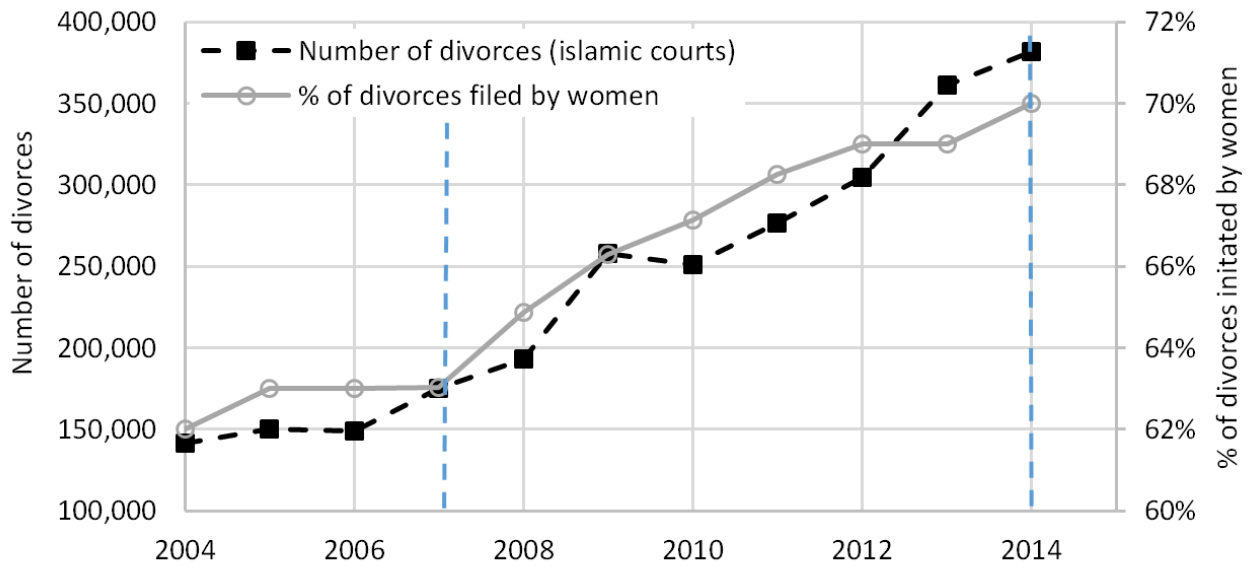
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Appendix A. Additional Results

Figure A1: Divorce Trends around Reform Time



Source: Statistics Indonesia (*Badan Pusat Statistik*). Vertical dashed lines: years of observation (2007 and 2014 IFLS).

Figure A2: Village-level Traditional Post-Marital Residence (IFLS data)



Table A1: Determination of Traditional Post-Marital Residence Norm by Ethnicity

Ethnicity	# Villages	Matrilocal (%)	Patrilocal (%)	Ambi/Neolocal (%)	Norm
Jawa	109	64.22	17.43	18.35	Matrilocality
Sunda	40	67.50	7.50	25.00	Matrilocality
Bali	15	0.00	86.67	13.33	Patrilocality
Minang	12	100.00	0.00	0.00	Matrilocality
Banjar	10	100.00	0.00	0.00	Matrilocality
Betawi	10	70.00	20.00	10.00	Matrilocality
Bugis	9	77.78	11.11	11.11	Matrilocality
Sasak	9	0.00	100.00	0.00	Patrilocality
Madura	6	83.33	16.67	0.00	Matrilocality
Melayu	6	50.00	16.67	33.33	Matrilocality
Batak	4	25.00	75.00	0.00	Patrilocality
Bima	4	50.00	25.00	25.00	Matrilocality
Cirebon	2	100.00	0.00	0.00	Matrilocality
Makassar	2	100.00	0.00	0.00	Matrilocality
Nias	2	0.00	100.00	0.00	Patrilocality
Palembag	2	100.00	0.00	0.00	Matrilocality
South Sumatra	2	0.00	100.00	0.00	Patrilocality
Toraja	2	100.00	0.00	0.00	Matrilocality
Dayak	1	100.00	0.00	0.00	Matrilocality
Sumbawa	1	0.00	100.00	0.00	Patrilocality
Tionghoa	1	0.00	100.00	0.00	Patrilocality

Villages are grouped according to their dominant ethnic group. The table reports, for each ethnic group, the distribution of villages' traditional norms of post-marriage residence (matrilocal, patrilocal or ambilocal/neolocal). Traditional norms are drawn from the declaration of local *Adat* experts in the 1997 IFLS. We attribute a residence norm to each ethnic group, defined as the modal answer from this distribution.

Table A2: Descriptive Statistics of the Main Variables

	2007			2014			Raw
	Matri.	Patri.	Diff.	Matri.	Patri.	Diff.	DD
Main Outcome							
Husband's Split Migration	0.038 (0.192)	0.048 (0.215)	-0.010 (0.007)	0.053 (0.223)	0.043 (0.202)	0.010 (0.006)	0.020** (0.010)
Main Control Variables							
Age Category	6.143 (2.331)	6.286 (2.425)	-0.142* (0.080)	6.080 (2.294)	6.073 (2.367)	0.007 (0.069)	0.149 (0.106)
University	0.051 (0.220)	0.043 (0.204)	0.007 (0.009)	0.082 (0.275)	0.081 (0.272)	0.001 (0.007)	-0.006 (0.011)
Work	0.624 (0.484)	0.700 (0.459)	-0.075*** (0.016)	0.657 (0.475)	0.721 (0.449)	-0.064*** (0.014)	0.011 (0.022)
Rural	0.497 (0.500)	0.533 (0.499)	-0.035** (0.017)	0.411 (0.492)	0.509 (0.500)	-0.099*** (0.015)	-0.063*** (0.023)
Muslim	0.964 (0.187)	0.559 (0.497)	0.404*** (0.009)	0.968 (0.175)	0.578 (0.494)	0.390*** (0.008)	-0.014 (0.012)
Additional Controls							
Javanese	0.549 (0.498)	0.000 (0.000)	0.549*** (0.016)	0.546 (0.498)	0.000 (0.000)	0.546*** (0.014)	-0.003 (0.021)
Close District Capital	0.582 (0.493)	0.588 (0.492)	-0.007 (0.019)	0.578 (0.494)	0.561 (0.496)	0.017 (0.018)	0.024 (0.026)
Natural Disaster	0.563 (0.496)	0.576 (0.495)	-0.013 (0.019)	0.559 (0.497)	0.549 (0.498)	0.010 (0.018)	0.022 (0.026)
Number of observations	4964	1012	5976	6343	1363	7706	13682
Prop. Matri/Patri	83.1%	16.9%		82.3%	17.7%		

Statistics based on main DID sample in [Table 1](#). Matri/Patri: individual of ethnicities from matrilo- cal/patrilo- cal tradition. Diff.: difference between Matri and Patri, Raw DD: absolute difference-in-difference (with ***, **, * indicating significance at 1%, 5%, 10% levels). Standard deviations are reported in brackets in columns 1, 2, 4 and 5. Standard errors are reported in brackets in columns 3, 6 and 7.

Table A3: Placebo DID Estimations on Husband's Split Migration

	Husband's Split Migration						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post	0.000	-0.001	0.0179	0.003	0.010	0.024	-0.003
	(0.007)	(0.008)	(0.014)	(0.014)	(0.017)	(0.016)	(0.019)
Post × Matrilocal	-0.012	-0.011	-0.018	-0.012	-0.015	-0.016	-0.010
	(0.009)	(0.009)	(0.011)	(0.012)	(0.014)	(0.014)	(0.015)
Matrilocal	0.002	-0.006	-0.003	-0.015	-0.005	-0.005	-0.020
	(0.011)	(0.013)	(0.015)	(0.015)	(0.016)	(0.016)	(0.017)
Observations	10,465	10,366	10,366	10,366	8,066	8,066	8,066
R-squared	0.001	0.009	0.011	0.012	0.014	0.014	0.016
Clusters	321	320	320	320	317	317	317
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Post × Controls			Yes	Yes	Yes	Yes	Yes
Javanese				Yes			Yes
Post × Javanese				Yes			Yes
Close					Yes		Yes
Post × Close					Yes		Yes
Disaster						Yes	Yes
Post × Disaster						Yes	Yes

Placebo difference-in-difference estimations of husband's split migration on a sample of women in stable couples in 2000-2007 and surveyed in 2007, pooled with a sample of women in stable couples in 1993-2000 and surveyed in 2000. The outcome is a dummy variable indicating the husband's split migration since the preceding wave of the survey (i.e. since 2000 when surveyed in 2007, etc.). Post is equal to 1 for 2007 (placebo post-reform) and 0 for 2000 (placebo pre-reform). 'Disaster' is a dummy indicating individuals living in a village having experienced a natural disaster in the 5 years preceding IFLS 4 (2007). Other variables are described in [Table 1](#). Standard errors are reported in brackets and clustered at village of origin level. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: DID Estimations on Husband's Split Migration (Panel with Fixed Effects)

	Husband's Split Migration						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post	-0.013 (0.009)	-0.021 (0.014)	-0.287*** (0.028)	-0.286*** (0.028)	-0.280*** (0.030)	-0.281*** (0.031)	-0.271*** (0.032)
Post × Matriloc	0.018* (0.010)	0.019* (0.010)	0.028** (0.013)	0.035** (0.014)	0.040** (0.016)	0.041** (0.016)	0.046*** (0.017)
Rel. effect	41.6%	42.5%	63.0%	79.1%	90.7%	92.0%	102.0%
Observations	9,072	9,072	9,072	9,072	7,068	6,710	6,710
R-squared	0.001	0.006	0.011	0.012	0.013	0.016	0.016
Clusters	318	318	318	318	314	313	313
T-Test Equal. (p-val.)	0.099	0.066	0.000	0.000	0.000	0.000	0.000
Household FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Post × Controls			Yes	Yes	Yes	Yes	Yes
Post × Javanese				Yes			Yes
Post × Close					Yes		Yes
Disaster						Yes	Yes
Post × Disaster						Yes	Yes

Difference-in-difference estimations of husband's split migration on a sample of women in stable couples in 2000-2014 and surveyed in both 2007 and 2014. The outcome is a dummy variable indicating the husband's split migration since the preceding wave of the survey (i.e. since 2007 when surveyed in 2014, etc.). Post is equal to 1 for 2014 (post-reform) and 0 for 2007 (pre-reform). Other variables are described in [Table 1](#). 'Matrilocal', 'Muslim', 'Javanese', and 'Close' dummy variables are now absorbed in the household FE. The relative effect is calculated in % of mean outcome for patriloc group in 2007 (pre-reform). We report the p-values of T-Test of 'Post' = 'Post × Matrilocal.' Standard errors are reported in brackets and clustered at village of origin level. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Placebo DID Estimations on Husband’s Split Migration (Panel with Fixed Effects)

	Husband’s Split Migration						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post	-0.005 (0.011)	-0.008 (0.015)	0.056 (0.037)	0.051 (0.037)	0.036 (0.045)	0.055 (0.039)	0.036 (0.046)
Post × Matrilocal	-0.016 (0.012)	-0.016 (0.012)	-0.025 (0.016)	-0.017 (0.017)	-0.016 (0.015)	-0.017 (0.015)	-0.009 (0.016)
Observations	6,536	6,536	6,536	6,536	5,718	5,718	5,718
R-squared	0.006	0.010	0.014	0.014	0.017	0.016	0.017
Clusters	318	318	318	318	316	316	316
Household FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Post × Controls			Yes	Yes	Yes	Yes	Yes
Post × Javanese				Yes			Yes
Post × Close					Yes		Yes
Post × Disaster						Yes	Yes

Placebo difference-in-difference estimations of husband’s split migration on a sample of women in stable couples in 1993-2007 and surveyed in both 2000 and 2007. The outcome is a dummy variable indicating the husband’s split migration since the preceding wave of the survey (i.e. since 2000 when surveyed in 2007, etc.). Post is equal to 1 for 2007 (placebo post-reform) and 0 for 2000 (placebo pre-reform). ‘Disaster’ is a dummy indicating individuals living in a village having experienced a natural disaster in the 5 years preceding IFLS 4 (2007). Other variables are described in [Table 1](#). ‘Matrilocal’, ‘Muslim’, ‘Javanese’, ‘Close’ and ‘Disaster’ dummy variables are now absorbed in the household FE. Standard errors are reported in brackets and clustered at village of origin level. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Difference-in-difference Estimations on Joint Migration

	Joint Migration						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post	-0.000	-0.008	0.033	0.038*	0.024	0.014	0.020
	(0.010)	(0.010)	(0.023)	(0.020)	(0.022)	(0.019)	(0.014)
Post × Matriloc	0.000	0.002	0.011	0.003	0.006	0.015	0.004
	(0.011)	(0.011)	(0.014)	(0.015)	(0.013)	(0.012)	(0.012)
Matrilocal	-0.005	-0.021	-0.026	-0.005	-0.008	-0.008	0.002
	(0.013)	(0.016)	(0.016)	(0.017)	(0.011)	(0.011)	(0.012)
Rel. effect	0.1%	1.8%	9.5%	2.1%	12.9%	33.2%	9.2%
Observations	14,876	14,390	14,390	14,390	10,577	10,393	10,155
R-squared	0.000	0.058	0.059	0.061	0.054	0.046	0.047
Clusters	321	320	320	320	317	318	317
T-Test Equal. (p-val.)	0.996	0.616	0.397	0.140	0.423	0.970	0.353
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Post × Controls			Yes	Yes	Yes	Yes	Yes
Javanese				Yes			Yes
Post × Javanese				Yes			Yes
Close					Yes		Yes
Post × Close					Yes		Yes
Disaster						Yes	Yes
Post × Disaster						Yes	Yes

Difference-in-difference estimations of joint migration on a sample of women in stable couples in 2007-2014 and surveyed in 2014, pooled with a sample of women in stable couples in 2000-2007 and surveyed in 2007. The outcome is a dummy variable indicating joint migration (i.e. spouses migrate together) since the preceding wave of the survey (i.e. since 2007 when surveyed in 2014, etc.). Post is equal to 1 for 2014 (post-reform) and 0 for 2007 (pre-reform). ‘Controls’ are described in Table 1. The relative effect is calculated in % of mean outcome for patriloc group in 2007 (pre-reform). We report the p-values of T-Test of ‘Post’ = ‘Post × Matriloc.’ Standard errors are reported in brackets and clustered at village of origin level. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Appendix B. Proofs of Theoretical Results

MAIN PREDICTIONS

Proof. Prediction 1: From Assumption II and III, we know that, for every level of income, $\Delta v_{split-joint}^{HP} > \Delta v_{split-joint}^{HM}$. Since incomes at the origin location follow the same probability distribution for both patrilineal and matrilineal husbands, then $Pr(m = 1|\epsilon^M) = f(\epsilon^M) > f(\epsilon^P) = Pr(m = 1|\epsilon^P)$ with m a dummy denoting split-migration, and $F(\epsilon^M) > F(\epsilon^P)$. In words, matriloc men accept to migrate for smaller financial gains from migration, i.e. for

higher levels of income at the origin location, compared to patrilocal men. As a result, they migrate more often. ■

Proof. Prediction 2: It follows directly from the proof of prediction 1 and from assumption IV. ■

COROLLARY PREDICTIONS

Proof. Prediction 3: As discussed in the text, for levels of income greater than (or equal to) \bar{y}_{split}^H , nobody migrates in either group. So it is for $y^{Hh} < \bar{y}_{split}^H$ that the difference in migration rates shown by proposition 1 is realized. ■

Proof. Prediction 4: This follows from assumptions II and III. ■