Behavioral responses to temporary migration: An examination of origin-country fertility

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Abstract

Temporary migration is an increasingly important labor market option for many individuals from developing countries. These individuals often keep close ties with their communities of origin, eventually returning home after working abroad. As a result, they often transmit ideas they have been exposed to in their country of destination back to their home community. In this paper, we examine the impact of exposure to reproductive health policies during migration episodes on origin-country fertility behavior. To do this, we exploit temporal variation in destination country reproductive health policies combined with spatial variation in both the intensity and destination-mix of temporary migration from the Philippines. We find that the proportion of women in a municipality giving birth in a particular year decreases after exposure to more liberalized reproductive health policies. This appears to be driven by changes in contraceptive behavior. On average, exposure to more open policies seems to be sufficient to increase adoption of modern methods already in use in the Philippines, but insufficient to nudge women into alternative modern methods, such as injectables. Contraceptive behavior appears to respond due to changes in preferences surrounding reproductive health, rather than changes in income or knowledge of contraceptives.

Keywords: Migration, Reproductive Health, Fertility, Philippines

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1 Introduction

Temporary international migrants often keep close ties with their communities of origin. During their time abroad, these migrants spend a significant amount of time in a culture that often differs significantly from their origin community. Upon return to their origin community, their exposure to different cultural practices may influence behavior and preferences in their origin communities, which in turn may impact economic development. Rapoport, Sardoschau and Silve (2020) find evidence of these "cultural remittances," showing that migrants transfer cultural values and norms from their destination country to their country of origin. In particular, exposure to destination country policies and attitudes through migration can affect voting patterns and political beliefs (Tuccio, Wahba and Hamdouch, 2019; Barsbai et al., 2017; Batista and Vicente, 2011; Chauvet and Mercier, 2014; Spilimbergo, 2009) as well as gender norms (Tuccio and Wahba, 2018; Dannecker, 2005) in the country of origin.

Migrant origin countries may differ in preferences and behavior in other dimensions as well. In particular, fertility decisions, especially surrounding openness to modern contraceptive choices, may vary substantially between destination and origin. Empowering decisions about fertility has consequences for development both at the micro (Joshi and Schultz, 2012) and macro level (Ashraf, Weil and Wilde, 2013). Thus, the transmission of such behavior from the destination country serves as another way in which migration may impact development in origin countries. In this study, we examine the effect of exposure to destination-country reproductive health policies through temporary migration on fertility decisions in the country of origin. Specifically, we examine the effect of exposure to more openness surrounding reproductive health policies, as measured by fewer legal restrictions, on fertility and contraceptive decisions in the Philippines. The Philippines has historically experienced a much slower fertility decline compared to its neighbors, generally believed to be due to limited promotion and use of modern contraceptive methods (Herrin, 2007). This institutional environment presents an opportunity for exposure to more open reproductive health environments to both provide new information and shape fertility norms, and thus opportunity for fertility decline. High fertility combined with low adoption of modern contraceptive methods, as well as high rates of temporary migration to a diverse set of destination countries, makes the Philippines an ideal setting to study this question.

We exploit spatial and temporal variation in reproductive health policies in destination countries of temporary Filipino migrants. To do this, we expand upon a database of country-year reproductive

health policies compiled by Finlay, Canning and Po (2012) in order to create a "liberalization index," which measures openness and access to reproductive health based on laws in each destination country surrounding the pill, condoms, IUD, sterilization, and abortion. To create a measure of exposure to reproductive health policies by migrants and their communities, we use the historical destination mix of migrant destination countries in each municipality to create a weighted measure of this index for that municipality. Thus, if a municipality has individuals who work in both Saudi Arabia and Canada, that municipality's assigned liberalization index is the index for Saudi Arabia and Canada, each weighted by the historical share of migrants moving to that destination from the municipality. We interact this "weighted liberalization index" with the historical density of migrants in the municipality. Individuals who live in municipalities with limited historical migration have less opportunity to be influenced by changes in the policies of destination countries, since there are few migrants out of the population.

To create the historical destination-mix and density of migrants for each municipality, we use a unique dataset compiled from the Philippine government that includes the origin and destination for all migrants from the Philippines from 1992 through 2016. We link this municipality-year level dataset to panel data on fertility and contraceptive adoption rates over time, constructed from four waves of Demographic and Health Surveys for the Philippines. Our effects are identified off changes in reproductive health policies in destination countries, holding constant the baseline rate of migration. Because we identify off changes in the liberalization index within municipality over time, our identification strategy eliminates threats that certain municipalities facilitate migration to more progressive destinations. Further, because we hold the rate of baseline migration constant, we eliminate the threat that any decline in fertility is simply due to separation of partners during migration episodes.

We find that municipalities exposed to more liberalized reproductive health policies experienced a decline in the fertility rate. One additional migrant per 1,000 residents in a municipality experiencing a 0.1 SD increase in exposure to more progressive reproductive health policies leads to a reduction in fertility of 0.01 percentage points (0.10%). We separately examine the role of male and female migrants, and find that while exposure of both male and female migrants results in changes in reproductive health behavior, exposure of female migrants to more liberalized polices has a larger effect. These fertility declines appear to be driven by women switching from traditional methods of contraception to modern methods. Moreover, rather than women adopting new modern methods, we tend to see increased adoption of historically more popular modern methods within

the Philippines, and in particular, the birth control pill.

Migration could facilitate this behavior change through three key channels: 1.) increases in income; 2.) increased information or knowledge about contraceptives; or 3.) changes in preferences, such as desired fertility. A key advantage of our approach is that we can shed light on which channel is driving our results. In terms of the income channel, since our identification strategy exploits both changes in policies across numerous destination countries over time and different migration patterns of various municipalities, we compare municipalities that receive very different exposure to reproductive health policy, but all benefit from increased income due to migration. Of course, migrants to the United States earn higher wages than migrants to Saudi Arabia, for instance. Our administrative data from the Philippine government contains data on the wages of all individual migrants in each destination. This enables us to control for the average migrant wage in each municipality. With the inclusion of this control, the results are unchanged and so we conclude that increased income due to migration does not seem to cause the decline in fertility. Further, exposure to more liberalized reproductive health policies does not result in increased knowledge about contraceptive methods, which suggests increased information likely does not drive our results. Rather, the results appear to be driven by changes in preferences, particularly due to a decrease in the reported ideal number of children.

Our paper contributes to a growing literature on the transmission of destination country behavior and preferences to migrant origin countries (Tuccio, Wahba and Hamdouch, 2019; Barsbai et al., 2017; Batista and Vicente, 2011; Chauvet and Mercier, 2014; Spilimbergo, 2009; Tuccio and Wahba, 2018; Dannecker, 2005). Specifically, our paper is related to the literature on the effects of migration on origin-country fertility. Much of this literature estimates the effects of migration on fertility by comparing migrants to non-migrants or areas with more migration to areas with less migration. For example, Lindstrom and Saucedo (2002) show that migrants from Mexico to the U.S modify their fertility behavior while abroad and maintain this behavior upon their return to Mexico. Hildebrandt and McKenzie (2005) also show that fertility behavior is diffused back to Mexico. Similarly, Bertoli and Marchetta (2013) compare the fertility rates in Egypt of households with men returning from work in high birth rate Arab countries to households without a return migrant. Using oil prices to instrument for the endogeneity of the migration decision, they find that households with return migrants have a higher number of children per woman, which is in line with the higher fertility rates in the destination countries of these workers. Other recent work improves upon the identification of these papers by addressing the endogenous nature of the migration de-

cision, and instead comparing fertility outcomes of migrants going to different destinations. For instance, Fargues (2011) compares the fertility outcomes for migrants from Morocco and Turkey, where migrants go to western countries, to those of migrants from Egypt, where migrants typically migrate to the Gulf. Beine, Docquier and Schiff (2013) use cross-country data on aggregate migrant flows and origin country fertility rates and find declines in fertility, which they attribute to norms.

We build upon the identification strategies used in these previous papers by exploiting variation in the destinations of migrants from various parts of the Philippines interacted with changes in policies in those destinations. By exploiting variation in reproductive health policy changes at destination, we reduce concerns about the potentially endogenous nature of the formation of migrant networks. We also examine the effect of exposure to reproductive health policies on the entire community rather than focusing on the effects on migrant relative to non-migrant households. If knowledge about reproductive health is diffused in the community beyond the migrants themselves, comparing migrants to non-migrants will result in an underestimate of these effects. Further, our unique identification strategy combined with the rich contraceptive use, contraceptive knowledge, and fertility preference data in the Philippine DHS allows us to explore the mechanisms driving the changes in fertility more directly. Since we rely on changes in reproductive health policy within each destination country for identification, we are able to isolate the effect of reproductive health policy exposure on fertility from an income effect.

A substantial share of our identifying variation comes from changes in reproductive health policies that reduce restrictions on the advertisement of condoms and the pill in destination countries. Thus, our paper also broadens our understanding of the determinants of fertility, specifically the role of media. Several studies have examined the role the media can play in impacting fertility. This literature typically relies on variation in the timing of cable network access. Using this approach, Ferrara, Chong and Duryea (2012) examined the impact of exposure to novelas in Brazil, while Jensen and Oster (2017) examined the impact of cable access in India on many outcomes including fertility. More recently, Kearney and Levine (2015) examined the role of MTV on teen-pregnancy in the United States. In all cases, the evidence points to reductions in fertility in response to this media exposure, and several consider information transfer a key mechanism for these results. Leadership may also help inform fertility behavior. A papal visit to Brazil that conveyed no new information on fertility finds an increase in fertility (Bassi and Rasul, 2017). In all of these studies, the impacts are only considered among country-residents. Our paper extends this literature by examining the potential for these influences to reach beyond borders.

2 Background

2.1 Migration

Temporary, or circular, migration is a key development strategy for many developing countries throughout Asia. For instance, Bangladesh, Sri Lanka, the state of Kerala in India, and the Philippines all have government agencies or bureaus dedicated to the facilitation of labor migration as part of their development plans. In the case of the Philippines, the the facilitation of temporary contract migration commenced in 1974 in response to poor economic conditions at home. This migration is largely legal, and workers are matched with employers through licensed recruitment agencies.

The Philippines is one of the largest origin countries for migrants globally, with approximately 2% of the population migrating each year. Filipinos migrate on temporary contracts to a diverse set of destination countries globally. These destination countries include numerous countries in the Middle East and Asia, but also the United States, Canada, and numerous European countries. Filipino temporary migrants also work in a range of occupations across skill levels, from domestic helpers and laborers to nurses and engineers. Migrant networks are an important determinant of destination countries for migrants globally, and this remains true in the Philippines (Munshi, 2003; Theoharides, 2018). Localities in the Philippines that historically had a large number of migrants moving to Italy, for instance, still have a large number locating there today.

The average contract duration of these migrants is approximately 24 months. If the migrant does not renew their contract or initiate a new contract, they return home to the Philippines at the conclusion of their contract. While many migrants renew these contracts, often multiple times, it is also common for them to return between contracts for a short holiday. As a result, temporary contract migration links the country of destination and the Philippines more closely than permanent migration, during which the migrant and their family leave the Philippines.

2.2 Reproductive Health

Globally, fertility has declined steadily over the last several decades. This general pattern is also true in the Philippines. Since the 1970s, when the government committed to reducing family size (Herrin, 2007), fertility steadily declined (NSO et al., 1999; NSO and ORC, 2004; NSO and ICF, 2009; PSA and ICF, 2014). However, relative to its neighbors, the Philippines experienced slower fertility declines resulting in persistently higher fertility rates than Southeast Asia as a whole. The

overall decline in fertility in the Philippines hides considerable regional variation: both the level of fertility and the pace of the decline in fertility have not been equal across regions.

Much of the fertility decline has been attributed to increased contraceptive use which has steadily increased over the last several decades. The Philippiness is a predominantly Catholic country, and contraceptive use has been widely influenced by Catholic values regarding contraception promotion and use. Despite this, contraception adoption has steadily increased. The largest gains in contraception adoption occurred before our period of study between 1970 and 1998, which witnessed a tripling in the proportion of women using contraception. Within our sample period, contraception adoption continued to increase albeit at a slower pace moving from 47 percent in 1998 to 55 percent in 2013. Despite these gains unwanted pregnancies remain high, and the unmet need for contraception by 2013 was still 18 percent. Among women using family planning methods, there has also been a shift toward modern contraceptive methods, resulting in a 30 percent (or 8 percentage point) increase in the use of such methods between 1993 and 2003. Among modern methods, sterilization was the most common method used by women at the beginning of our period of interest, but this has shifted over time to become the pill.

3 Data

We assemble several different data sources, combining administrative, secondary, and policy data to create a unique new database for our analysis.

Our primary outcome of interest is fertility. We measure births using the 1995, 2000, 2007, and 2010 100% Philippine Census of Population. We determine the number of births occurring in each municipality by counting the number of children less than one year old in each Census wave. We then construct birth rates for each municipality by dividing the number of births by the population of women aged 15 to 49. Table 1, Panel B indicates a birth rate of approximately 100 births fper 1,000 women of child-bearing age across Census waves.

In order to further explore reproductive health behaviors, attitudes, and preferences in the Philippines across time, we use four waves (1998, 2003, 2008, and 2013) of the Philippine Demographic and Health Survey (PDHS). The PDHS is a comprehensive national survey of women aged 15 to 49, and relative to the Census, provides a much richer set of demographic and reproductive health outcomes. The DHS collects complete retrospective birth histories for all female respondents. Using these self-reported histories, we construct whether a woman gave birth in any

particular year from the time they reached the age of menarche to the year of data collection. We are then able to compare theese results to the results using the 100% Census. In an effort to limit bias arising from the representativeness of the constructed panel, we limit the birth histories to cover birth cohorts 18 years prior to the DHS. We further restrict the sample to women aged 10 or older at the time of the potential birth. For example, for a women age 15 at the time of the DHS interview, we construct a 5-year retrospective history from the time they were aged 10 to age 15, and record whether they gave birth in each year. However, for a women age 35 at the time of the DHS survey, we consider the past 18-years and determine whether or not she gave birth in each year.[1] Our primary indicator of interest is whether a women (age 10 or older) had a birth in any given year covering the period 1980 through 2013.[2] On average, 12.9 percent of women give birth annually (Table 1).

We also use the DHS to construct contraceptive use outcomes, which allow us to better explore mechanisms underlying the fertility decisions. To do so, we use the detailed five-year retrospective history of current contraceptive use, available in the 1998 and 2003 survey rounds. Thus, the resulting contraceptive use sample spans the period 1993 through 2003. Just less than one-third of the sample report using any contraceptive method in a particular year, which is fairly evenly split between modern and traditional contraceptive methods.[3] Among modern contraceptive use methods, the pill is by far the most commonly used method, with 7.2% of women using the pill in any particular year. Other modern methods of choice include sterilization (5.5%) and IUDs (2.5%). These descriptive findings are consistent with previous literature in the Philippines that document a strong preference for the pill and sterilization (NSO et al., 1999; NSO and ORC, 2004; NSO and ICF, 2009; PSA and ICF, 2014). Younger women typically adopt the pill to control birth spacing while sterilization is more common among older women and used to limit the number of births (Laguna, Po and Perez, 2000).

Table 1 presents some descriptive statistics of our sample. Overwhelmingly, the women in our sample are Catholic (77%) and the majority have completed either secondary (40.4%) or tertiary (33.4%) education.

We measure exposure to migration using an expanded version of the database on all temporary

[1]Restricting analysis to observations corresponding to the year in which the DHS is collected does not qualitatively change our results, but does unnecessarily reduce power.

[2]While a PDHS was conducted in 2018 and is publicly available, the reproductive health policy data we use as our primary source of variation (see below) does not extend into this time period.

[3]Modern contraceptive methods include the pill, IUD, injection, condoms, and sterilization, while traditional contraceptive methods include periodic abstinence, ovulation, Basal body temperature, symptothermal methods, breastfeeding, withdrawal, and herbal medicines.

contract migrants from the Philippines used in Theoharides (2018). These data were obtained from the Philippine Overseas Employment Administration (POEA) and the Overseas Worker Welfare Administration (OWWA) and cover all outflows of temporary contract workers from the Philippines from 1992 through 2016.[4] Importantly, these data include both the location of origin (municipality) and destination country for all migrants, thus establishing the flow of migrants across various migration channels. It also includes the gender and occupation of the migrant, allowing us to examine disaggregated country-specific migrant flows. Geographic identifiers enable us to link the DHS data to the POEA contract database at the municipality level.[5]

We use the first year of data, 1992, in order to create measures of both the intensity and destination-mix of migration. We measure intensity by aggregating the total number of temporary migrants in each municipality and dividing by the municipality population, which we obtain from the Philippine Census of Population. Table 2 indicates that that the average municipality has approximately 1.9 migrants per 1,000 residents. There is considerable variation throughout the Philippines in terms of the intensity of migration: the average low baseline migration province (defined as below the median migration rate) has approximately 0.21 migrants per 1,000 residents in 1992, while the average high baseline migration province has 3.3 migrants per 1,000 residents (Columns 3 and 5). Figure 1 highlights similar heterogeneity in the 1992 migration rate across the Philippines. The darkest blue represents the highest rates of outmigration.

We also create measures of the destination-mix for each municipality in the Philippines in order to create exposure weights for the reproductive health policies at destination and create the liberalization index. Again using the base year (1992), we calculate the share of temporary migrants going to each destination country out of the total temporary migrants from the municipality. The average municipality has migrants in 8.4 different destinations at baseline, with high baseline migration provinces having migration to a larger number of destinations (12.9) than low baseline

[4]POEA is tasked with making sure workers' contracts meet the minimum wage required by the Philippine government. To do this, they collect detailed data on demographics, occupation, wages, and destination country for all Filipino migrants. OWWA monitors the welfare of migrants and their families in the Philippines. They collect similar demographic data to POEA, but also collect detailed data on the location of origin in the Philippines for each migrant. For the data from 1992 to 2009, we matched the POEA and OWWA data in order to create a dataset that includes both the destination and home address of each migrant from the Philippines. The data are matched on first name, middle name, last name, date of birth, destination country, gender, and year of departure using fuzzy matching techniques Winkler (2004). See Theoharides (2018) for more details. Starting in 2010, POEA also recorded the location of origin of the migrants so we did not need to use these matching techniques.

[5]The smallest geographic unit identified in the DHS is a "cluster." A cluster in the DHS refers to a group of households in close geographic proximity to one another. GPS coordinates are collected but are provided with an offset. The offset ranges from 0-2 km in urban areas, and 0-5 km in urban areas; in all cases clusters are not displaced across survey regions.

migration provinces (3.0). Finally, to further illustrate the importance of various destination countries for Filipino migration, we show the average baseline number of migrants per 1,000 residents for the top 10 destinations of Filipino migrants. These top 10 destinations are largely to the Middle East or within Asia.[6] The average municipality has approximately 1 migrant per 1,000 residents to Saudi Arabia compared to 0.15 migrants per 1,000 to Japan, the second most important destination country in 1992.[7]

To measure reproductive health policies in the destination countries of temporary migrants from the Philippines, we adapt a set of indices compiled by Finlay, Canning and Po (2012). They construct decade-specific reproductive health policy indices based on the prevailing reproductive health laws in 186 countries. Separate indices are available for abortion, condom, pill, IUD, and sterilization laws. For each index, a set of criteria is defined against which the policies of each country are scored. An example of the pill scoring mechanism is presented in Figure 2. Using this score card, if a country introduces a new reproductive health act that legalizes commercial advertising of the pill without any restrictions from an original policy regime of advertising being illegal, there would be an increase of 3 points in the pill index. For each sub-index, the Finlay measure is defined as the number of points a country receives divided by the total possible number of points. So in our example, the pill advertising change would increase the percent of maximum liberalization for the pill by 25 percentage points.[8] Maximum liberalization is attained by scoring the full number of points for the sub-index. For our purposes, to construct a composite reproductive health policy liberalization index by country, we standardize each sub-index and average the five standardized sub-indices. This implicitly weights the policy environments for abortion, condom, pill, IUD, and sterilization equally.[9]

Some details regarding our imputation assumptions are important to highlight. First, the Finlay, Canning and Po (2012) coding of policies is decade specific. To address this, we undertake our own review of the policies relying heavily on the sources referenced by Finlay, Canning and Po (2012) to determine the precise year in which a policy changed. Appendix A details this process

[6]The United States is the 12th highest destination for temporary migrants in 1992.

[7]The ranking of destinations is determined by the total number of migrants departing the Philippines for a given destination at baseline (1992). This ranking is not necessarily the same as the ranking that would be obtained if we ranked destinations by the average baseline migrants per thousand across municipalities, since the variance of this variable varies substantially across municipalities by destination. This is why, for instance, Japan has more migrants overall than Hong Kong, but a lower average migrants per 1,000 across municipalities.

[8]The maximum possible score for the pill is 12 points, thus an increase of 3 points translates into a 25 percentage point increase.

[9]To address missing sub-indices we take two approaches. In our main results, we omit that particular sub-index and aggregate across the other four. As a robustness check, we instead assume it to be zero and include it in the index. Results are robust to the method used.

and our reasoning for the specific year selected based on our review of the policies. We link these country-specific liberalization indices to the migrant flow database at the country-year level. Second, for all territories, we assign the policy index values of the governing country. For instance, the Commonwealth of the Northern Mariana Islands are an unincorporated territory of the United States, and are thus assigned the policy index value for the United States.

Table 3 examines the underlying variation in the policy changes which underpin our identification strategy. In our sample period, approximately two-thirds of the countries experience at least one change in to their reproductive health policies based on this scoring algorithm. Panel A shows that pill and condom related policy changes are the most likely to experience any change in policy during in our sample period. A total of 40.7% and 32.7% of countries change pill or condom policies during this time, with an (unconditional) average of 1.2 and 0.7 changes for pill and condom policies respectively. Many of the pill and condom changes often happen simultaneously and relate to countries implementing or adjusting subsidies or changing their policies related to marketing of these products (Appendix Table 1). Restricting attention to only the top 20 destination countries during our base year does not substantively change these conclusions.

Table 3, Panel B presents summary statistics of the sub-indices and the standardized index for our estimation sample (columns 1 through 4). Based on the scoring algorithm, sterilization policies are considered the most liberalized with a score of 83.9% of maximum liberalization, while abortion policies are considered the least liberalized scoring only 57.9% of maximum liberalization. Table 3 also presents the mean and standard deviation of these indices in our base period (1992, in columns 5 and 6) and final DHS year (2013, columns 7 and 8). In general, reproductive health policies became more liberalized across this time period. Figure 3 plots the distribution of changes to the country-specific liberalization index. This illustrates that indices both increase (become less restrictive) and decrease (become more restrictive), while also highlighting that the distribution is shifted to the right.

4 Empirical Strategy

To examine the impact of exposure to more liberalized reproductive health policy during temporary migration episodes on origin country reproductive health behavior, we use a difference-in-differences approach. Our key sources of variation come from temporal variation in destination country reproductive health policy combined with spatial variation in both the intensity and destination-mix

of temporary migration. More specifically, we construct two key variables to obtain the causal impact of exposure to reproductive health on fertility: the baseline migration rate and an indicator of exposure to more liberalized reproductive health policies, and estimate the following regression equation:

$$Y_{imt} = \beta_0 + \beta_1 MigRate_{m,t=0} + \beta_2 LibIndex_{m,t-2} + \beta_3 MigRate_{m,t=0} XLibIndex_{M,t-2}$$
$$+ \beta_4 DestShare_{m,t=0} + \delta_p + \tau_t + \delta_p Xtime_t + \epsilon_{mt}$$

where Y_{imt} is a binary variable equal to 1 if woman, i, gave birth (or used contraceptives) in municipality m, in year t. $MigRate_{m,t=0}$ is the base year migration rate (1992) for the municipality in which the woman is located at the time of the DHS, where the migration rate is defined as the number of migrants in 1992 divided by the municipality population as calculated in the 1990 Philippine Census. $LibIndex_{m,t-2}$ is the standardized weighted liberalization index in the woman's municipality. To construct this key variable for each municipality-year, we use the base share of migrant flows from a municipality to each destination country to weight the destination country's current liberalization index score. These weighted destination-specific measures are aggregated to create a weighted reproductive health policy exposure measure for each municipality. A larger value means the municipality was exposed to more liberalized reproductive health policies due to temporary migration. We lag this by two years as typical contracts for temporary migrants are two years in length. Finally, $MigRate_{m,t=0} XLibIndex_{M,t=2}$ is the interaction of the baseline migration rate and the weighted liberalization index. Our primary coefficient of interest is β_3. Because we rely on base shares to destination countries to weight the index, our identification strategy is similar to a shift share design. In Section 6, we conduct a number of robustness checks based on

We include province (δ_p) and birth-year (τ_t) fixed effects as well as province-specific linear time trends ($\delta_p Xtime_t$). By including province fixed effects, we account for any time-invariant province-specific characteristics. For example, if a particular province consistently has more health care options available than other provinces and that is correlated with the liberalization index for province, we could wrongly attribute reduced fertility to more liberalization, rather than to the better health care options. We remove this from our identifying variation through the inclusion of the province fixed effects. Similarly, by including time fixed effects, we control for any countrywide time-specific impacts on fertility, such as a countrywide natural disaster or changes to national

health policies that unilaterally affect the Philippines. Further, by including province specific time trends, we allow for fertility to trend differentially across provinces. For instance, including these time trends accounts for differential growth in fertility in provinces with exposure to both high baseline migration and more liberalized destination countries relative to provinces with low baseline migration and less liberalized destination countries.

One remaining threat to our identification strategy is omitted variables that are correlated with fertility and $MigRate_{m,t=0}XLibIndex$. We already control for differences in the baseline migration rate, as well as the contemporaneous weighted liberalization index. As a result, our remaining concern is regarding municipalities with the same initial migration rate that are currently exposed to the same weighted liberalization index. If these municipalities have differences in the baseline destination mix, we would wrongly attribute changes in fertility to more liberalized policies when it is actually driven by historical selection into more or less liberalized destinations. For example, we are concerned that municipalities with better access to health care are also likely to be municipalities with historical migration networks to countries with less restrictive reproductive health policies. This underlying relationship would lead to bias in our coefficient of interest β_3. To ensure that we are identifying off changes in policy liberalization rather than the destination mix, we explicitly control for the migrant destination shares in the municipality at baseline.

We use baseline municipality-specific migration rates and baseline migration destination composition to avoid introducing endogeneity into our estimation equation. For instance, contemporaneous values of these variables could be affected by the changes in the fertility rate due to the liberalization of reproductive health policies. To avoid this potential reverse causation, we instead use the migration rates and composition at baseline. Given the importance of migrant networks across time (Munshi, 2003), the destination composition in the base year is a reasonable proxy for the destination composition today. While historical networks of destinations in the Philippines are not perfectly predictive of the destination composition today, Theoharides (2018) shows that they explain much of the variation in contemporaneous migration.

Our main identifying assumption is that in the absence of reproductive health policy changes at destination, fertility in municipalities with higher baseline migration would not have evolved differentially to provinces with lower baseline migration. Two threats to identification could occur. First, conditional on the same level of migration, municipalities that have migrants in destinations that adopt more liberal reproductive health policies may trend differentially to municipalities that do not. Second, policies, either domestic or destination-specific, may change simultaneously with

the reproductive health policies that compose our index. For example, if countries are adopting less restrictive reproductive health policies and more labor friendly policies, then changes in reproductive health outcomes may be due to increased income, rather than reproductive liberalization. We discuss our identifying assumption and test for its validity in Section 5.1. Importantly, our difference in differences strategy means that any changes in fertility that we find are not due simply to the absence of individuals who are abroad. Our identification strategy compares areas with the same rates of migration, but different exposure to contraceptive policies. Thus, any difference in effects on fertility is due to the liberalization of contraceptive policies across two areas with the same base migration rates.

There is one final necessary point to make regarding our identification assumption. Because our treatment variable is continuous rather than binary, for identification to be interpreted as causal, we need what Callaway, Goodman-Bacon and Sant'Anna (2021) refer to as "strong" parallel trends, rather than "standard" parallel trends, which we have stated above. For the "strong" parallel trends assumption to be valid, we must assume that municipalities that receive different intensities of treatment would have similar outcomes if they received identical treatment intensities. We think this is a reasonable assumption in our context because all of the shocks to reproductive health policy occur outside the Philippines.

4.1 Identifying variation

Table 3 and Figure 3 detail the underlying variation in policy changes across destination countries of temporary migrants. All municipalities represented in the DHS data experience a change in their weighted liberalization index in at least one year. Across municipalities, the number of changes varies considerably from one to 17 years with a change. In any particular year, a change could be driven by one or more destination country policy changes. On average, the weighted change in a municipality is 7.5 percentage points indicating that the average policy change shifts towards more liberalized policies, although we do observe changes in both directions. Due to the weighting of the policy variation by the base destination shares, some policy changes contribute more to our underlying variation than others. That is, policy changes in destination countries that receive more migrants, as well those that receive migrants from many municipalities, contribute more to our underlying variation. For example, in 1999 Japan approved use of the pill for contraceptive purposes, increasing the pill specific index by 8.33 percentage points. Japan is also one of the top 10 destination countries in our base year (1992), thus this change influences many municipalities

but to varying degrees. To see the difference at the municipality level, consider two municipalities: Makati and Taguig. Both have very similar baseline shares of the population working as temporary migrants, 1.46 and 1.47 percent respectively. However, they exhibit vastly different patterns in where migrants work: 25 percent of all temporary migrants in Makati are based in Japan in 1992, versus 6 percent in Taguig. Thus, the pill policy change will have a larger effect in Makati as compared to Taguig. It is this difference that our identification relies on to identify the causal impact of exposure to more liberalized reproductive health policies.

Table 3 presents summary statistics on our main independent variables for our fertility estimation sample. Notably, there is considerable variation in the share of the population working as a temporary migrant in our base year, ranging from below 0% to almost 3% across municipalities. Importantly, there is considerable variation in the weighted liberalization indices. To get a sense of the variation in the weighted liberalization index over time, we use a Fourier decomposition to filter the variation into high and low frequency components (Baker, Benjamin and Stanger, 1999; Bound and Turner, 2006).[10] The overwhelmingly majority of the variation is in the low frequency range, with 89.5% of the variation occurring in the lowest frequency range (the frequency that corresponds to 12 years). This suggests that changes in the liberalization index are quite stable and persistent.

5 Results

5.1 Fertility Results

Table 4, Panel A presents the fertility results calculated from the Philippine Census. We find that births decrease by 1.02 percentage points in response to a 1 standard deviation increase in exposure to more "liberal" reproductive health policies (Column 1). While this effect appears large, consider a municipality that experienced an increase in the standardized liberalization index of 0.1 standard deviations given its destination mix. An additional migrant per 1,000 residents in the municipality leads to a reduction in fertility of 0.01 percentage points (0.10%). If instead we consider the effect of a 0.1 standard deviation increase in liberalization in a municipality with average baseline migration (0.2% of the population), we find a decline in fertility of 0.02 percentage points (0.19%). Consistent

[10] Using 24 years of data (1990-2013), we divide the weighted liberalization index into 12 orthogonal components of different frequencies using:

$$D_{pt} = \sum_{k=0}^{1} 1\left(\xi_k cos\left(2\pi\frac{k(t-1)}{24}\right)\right) + \left(\gamma_k sin\left(2\pi\frac{k(t-1)}{24}\right)\right) \quad (1)$$

We estimate E_k and γ_k separately by running regressions for each municipality.

with the previous literature, the negative coefficient on the base migration rate demonstrates that as migration increases, fertility declines (Jensen and Ahlburg, 2004; White and Potter, 2012). The inclusion of this control means that our effects are identified off changes in liberalization among destination countries, not changes in the migration rate itself.

Ideally, we would like to use the rich PDHS data to explore the mechanisms underlying our results. Because the PDHS is not representative at the municipality level, one concern is that the data for a particular municipality may be based on very few observations and suffer from measurement error. In order to check for this, in Panel B, we replicate Panel A, instead using the PDHS retrospective births data. We find very similar results. For a 0.1 standard deviaion increase in liberalization in a municipality with average baseline migration (0.2% of the population), we find a decline in fertility of 0.04 percentage points (0.25%) relative to a 0.19% decline shown above. While slightly larger than the Census results, we cannot reject the null hypothesis that the results are the same. These results confirm a similar story to the Census: exposure to more "liberal" reproductive health policies at destination leads to reductions in fertility in the origin. Second, we restrict our analysis to only municipalities with more than 50 observations per PDHS round. Here, we find a 1.11 decline in births in response to a 1 standard deviation increase in exposure (not shown). While the result is no longer statistically significant, this is likely due to a reduction in power since our sample size is reduced from 564,320 to 294,425. Given the similarity of the results, while the Census data represent our preferred specification, we make use of the richness of the PDHS data in the remainder of the paper as well.

For our results to be interpreted as causal, fertility in municipalities with high baseline migration rates should trend in parallel to municipalities with low baseline migration rates in the absence of changes in the liberalization index. We test the parallel trends assumption using long retrospective births history occurring between 1980 and 1992 from the PDHS since these births occur prior to the start of our analysis.[11]. We regress the fertility rate on the 1992 temporary migration rate, birth year, and the interaction of the two. For the identifying assumption to hold, the interaction term should not have a significant effect on fertility. We find that the coefficient on the interaction term is very small in magnitude relative to the main effects shown in Table 4 (-0.03 versus -1.82 percentage points), and it is not statistically significant. This suggests that our results are not driven by differential trending in high and low baseline migration provinces. In Section 6, we examine a number of additional robustness checks, and show that our results are qualitatively similar across

[11]Unfortunately, Census data is only available starting in 1990

all specifications.

We also consider whether there is heterogeneity in the effects on fertility depending on whether female or male migrants were exposed to more liberalized policies at destination. If we find different effects of male and female exposure on fertility, this may be because women are empowered to make different fertility choices as a result of exposure. With modern contraceptive measures, women and men can disagree about fertility but women can make their own decisions without the knowledge of men, as in Ashraf, Field and Lee (2014). If we find equal effects from male versus female migrant exposure to liberalization, this suggests that both men and women transfer this information. To conduct this analysis, we recalculate the base migration rate and shares to each destination country using only female migrants and again using only male migrants. We then construct both female and male liberalization indices. The results are shown in Table 4. For each additional female migrant per thousand residents, a 0.1 standard deviation increase in the liberalization index yields a 0.02 percentage point (0.20%) decrease in the fertility rate compared to a 0.006 percentage point (0.06%) decrease in the fertility rate for each male migrant per thousand residents. The results are similar when using the PDHS data for our analysis (Panel B). Ex ante, one might expect that the effect is smaller from male migrants, and we do find that each female migrant is more impactful than each male migrant. However, the fact that exposure to liberalized policies has any effect on male migration is worth noting.

We also explore whether there are heterogeneous effects on fertility depending on the occupation of the migrant. One of the largest occupations for temporary migrants from the Philippines is domestic helpers. Their exposure is different from that of other temporary migrants, who often live with other migrants from their country of origin, whether in dorms or in private housing. For domestic helpers and other workers like caregivers who reside in the home, they are exposed to local customs and media which could lead to more exposure to more liberalized policies. Alternatively, workers living with local families have less time to interact with other migrants, which could lead to less discussion and transfer of knowledge. Migrants in dorms may be somewhat isolated from local customs, but since much of our variation comes through liberalizing advertising for condoms, viewing these ads may lead to discussion. This is similar to Ferrara, Chong and Duryea (2012), who shows a fertility decline in response to soap operas in Brazil. We test this empirically by constructing both the baseline migration rates and the baseline destination shares for only domestic helpers, all home-based workers (domestic helpers and caregivers), and for non-domestic helpers. Because domestic helpers are overwhelming female (96%), we split non-domestic helpers by sex. Overall,

the results are slightly larger for non-domestic helpers (female) than domestic helpers, though we cannot reject that the effects are the same. Our results suggest that in terms of exposure affecting eventual fertility decisions, it does not matter whether migrants are based in the home versus not.

Temporary migration generally leads to increases in income for households in the migrant's location of origin (Khanna et al., 2021). If countries with more liberalized reproductive health policies also pay higher wages to migrants, the effects on fertility may simply be a result of increased income. To test for this, we add controls for median migrant wages in the municipality-year. We do not know the municipality of origin for migrants in 1999 through 2003. As a result, we cannot create the municipality-year wage controls for those years and must drop them from our sample. Thus, before examining the impact of the wage control on our results, we estimate our main fertility using this shortened sample period in Panel B of Table 5. The results are very similar to the main results for both the Census and PDHS. In Panel C, we add the control for median wages of migrants in the municipality. The results are essentially unchanged. This suggests that increases in income are not driving the declines in fertility.

5.2 Contraceptive Adoption and Use

To examine the underlying behavioral changes that drive the fertility decline, we turn to examining the impact of exposure to more liberal reproductive health policies through temporary migration on contraceptive use. Results are presented in Table 5, Panel A. Women in municipalities exposed to more liberal reproductive health policies switch away from traditional contraceptive methods to modern contraceptive methods. In particular, exposure reinforces the use of two of the three most commonly used methods in the Philippines: pills and IUDs, though the effect on IUDs is not statistically significant. In terms of magnitude, recall that the average municipality experienced a change in liberalization exposure of 0.00008 standard deviations. Thus, women in the average municipality increased modern contraceptive methods by 0.004 percentage points (2.6%). Modern methods are widely documented to be more effective in limiting conception even when assuming typical rather than perfect use (Polis et al., 2016). Using DHS estimates, Polis et al. (2016) calculate the 12-month failure rate for to be 1.6 for IUDs, 3.7 for the pill, and 7.7 for male condoms. Traditional methods exhibit much higher failure rates: 12.5 for periodic abstinence and 17.2 for withdrawal. Thus, even without an overall net increase in contraceptive use a switch to more modern methods is consistent with the decline in fertility that we found in Section 5.1.

In Panel B, we again first replicate the results using the wage sample, while in panel C we

control for average municipality wages. The results are again robust to this control. Increases in income do not appear to drive our results.

5.3 Mechanisms

Women in municipalities with more exposure to liberal reproductive health policies due to contract migration exhibit lower fertility. Lower fertility is achieved through behavioral changes in contraceptive use. What is it about the contract migration process that facilitates this behavior change? We identify three potential channels: i) income, ii) information and iii) preferences.

5.3.1 Income channel

Theoretically, one possible channel for our results is an income story. Destination countries that are becoming less restrictive with respect to their reproductive health policies may simultaneously become wealthier and offer higher wages to migrants. If this were the case, then our results could be driven by increases in income relaxing an underlying credit constraint that previously restricted contraceptive adoption. However, as discussed in Section 5.1. if we control for contemporaneous median migrant wages, our results are robust, suggesting that this channel does not drive our results.

5.3.2 Information channel

Temporary migrants travelling to destinations with more liberalized policies may be exposed to a wider range of family planning methods and/or different information about their efficacy and side effects. Migrants share their experiences broadly within their networks both while abroad and upon return. Thus, in communities with greater exposure through temporary migration to destinations with more liberalized reproductive health policies, women may be better informed about a wider range of modern family planning methods. In many health settings (Dupas, 2011), improved information changes behavior. In our setting, as women acquire this new information about contraceptive methods, contraception take-up may increase translating into reduced fertility.

To test the importance of the information channel, we examine whether there is an impact on respondents' knowledge of contraceptive methods. We follow (Glennerster, Murray and Pouliquen, 2021) as closely as possible given the questions available in the DHS, and construct an index of knowledge of contraceptive methods. We determine how many different contraceptive methods the respondent has ever heard about, and where possible whether the respondent does not incorrectly

believe contraceptive causes sterility. These results are presented in Table 6 column 1. We find that greater exposure to liberalized policies through temporary migration does not impact whether respondents have ever heard about a range of contraceptive methods. This provides some evidence that information updating is not the key mechanism underpinning our results. Ideally, we would like to examine a wider range of knowledge indicators to pick up more subtle changes in knowledge. Unfortunately, the PDHS does not have questions that measure beliefs regarding contraceptive efficacy or questions related to access to family planning methods that are consistent over time.[12]

5.3.3 Preferences channel

Our information results demonstrate limited learning gains. Another pathway through which women may update their behavior is through preference modification. For example, temporary migrants may also be influenced by the prevailing reproductive health preferences or societal norms (proxied by the policies) of the destination communities in which they work. Thus, rather than learning new information about family planning methods, women may instead change their desired fertility and accordingly adjust their contraceptive behavior. Prior research has identified temporary migration as influencing gender norms (Tuccio and Wahba, 2018; Dannecker, 2005) in the country of origin, and desired fertility might respond to exposure to environments with more progressive reproductive health policies in the same manner.

To examine this channel, we again adapt a set of indices used in (Glennerster, Murray and Pouliquen, 2021) that measure various aspects of norms regarding fertility and contraceptive behavior. We create five separate indices: women's perceptions of fertility and birth spacing; attitudes towards family planning; women empowerment; attitudes towards contraception of the husband and partners' perceptions of fertility and birth spacing as reported by women. These results are presented in Table 6 columns 2 through 6. Our strongest evidence regarding this channel comes from examining the impact of exposure to liberal reproductive health policies at destination on women's perceptions of fertility and birth spacing. This index combines information on the women's reported ideal number of children, their perception of the ideal age at first birth and the ideal delay between the first and second born. [13] A higher value in this case corresponds to the desire to have

[12] Over time the PDHS surveys have asked respondents about where they can get access to family planning methods, including in some years asking where the nearest family services are available. Unfortunately, the formulation of these questions vary considerably across time, and are sometimes asked at the community level and in other rounds at the individual level. Due to these data inconsistencies further analysis to explore this channel is limited.

[13] Examining changes in male preferences for the number of children is not possible. While many DHS surveys include a sample of men, in the Philippines only the PDHS 2003 includes a male sample.

more kids, and less spacing. This index falls for women in municipalities with more exposure to liberal reproductive health policies substantially; implying a reduction in the preferred number of children, as well as delaying fertility decisions. For all other indices except attitudes towards family we similarly observe a negative relationship, although only the attitudes towards contraception of the partner, which includes whether their partner disapproves of contraception, is statistically significant.

6 Robustness Checks

We conduct several additional robustness checks. Table 7 presents these results with each panel corresponding to a different specification check. For ease of comparison Panel A presents our main results.[14] In Panel B, we restrict our sample to all municipalities excluding Metro Manila. Metro Manila has the highest rates of baseline outmigration in 1992, and one might be concerned that these few municipalities are driving the results. Manila also experienced stringent policies regarding contraceptives during our sample period. Starting in 2000, the then mayor of the city of Manila, Jose Atienza, issued a ban on the sale of modern contraception within the city. This ban, like any program or policy limiting access to contraception within the Philippines, would inhibit the ability of women to respond to contraceptive influences from abroad. Our results are robust to excluding the municipalities composing Metro Manila. In Panel C, we present the population weighted results, and find they are similar to the results without sample weights. Since our sample consists of individual observations and the DHS surveys more respondents in high population areas, it is not surprising that the population weighted results are very similar to the unweighted results.

In Panel D, we add a control for the weighted liberalization index based on reproductive health policies in destination countries in 1980. We use the 1992 destination mix to create the weighted index for each municipality. The inclusion of this measure of the pre-period liberalization index is an alternative approach to address the concern outlined in the empirical strategy section that municipalities with the same initial migration rate and the same weighted liberalization index are different in some dimension that is correlated with fertility behavior. By controlling for the historical reproductive health mix, we identify our effect only off the changes in the policies.

In Panel E, we present the binary equivalent of our main specification. That is, we replace $MigRate_{m,t=0}$ with a binary indicator equal to 1 if the woman's municipality has above median

[14] note: Census fertility results to be added.

baseline migration in 1992. We replace $LibIndex_{m,t-2}$ with a binary indicator equal to 1 if the liberalization index is greater than the median value. Our main variable of interest is the interaction of these two binary variables. The coefficients are small in magnitude and no longer statistically significant. This is likely due to the loss of variation from making the key independent variables binary. The variation in the binary specification is limited because we identify off municipalities that change from being exposed to high (low) liberalization relative to low (high) liberalization. Even big changes, for example moving from the 90th percentile of the liberalization index in the municipality-year level data to the 55th percentile, are not contributing to the identifying variation in this binary specification. Thus, given the loss of variation, the lack of statistical significance is not surprising.

Another key consideration for the validity of the results is based on the recent shift-share literature (Goldsmith-Pinkham, Sorkin and Swift, 2013; Borusyak, Hull and Jaravel, 2020; Adao, Kolesar and Morales, 2019). This literature requires the assumption of either exogenous shares Goldsmith-Pinkham, Sorkin and Swift (2013) or exogenous shocks/shifters Borusyak, Hull and Jaravel (2020). We assume exogeneity of the shocks. Because the reproductive health policies are determined in the destination countries of Filipinos, the assumption of exogenous shocks seems more plausible than in many other shift share settings. However, we follow Borusyak, Hull and Jaravel (2020) and conduct a number of checks to ensure the validity of our strategy. First, following Borusyak et al., we conduct a falsification exercise where we regress the destination-level shocks on a number of key destination controls. The type of variable we might be concerned about are destination-level covariates that are related to the Philippines. For instance, places adopting more liberal reproductive health policies might also be increasing their openness to migrants. This could lead to potential bias for municipalities that have a large number of migrants in that destination, since we would not know if the decline in births is due to the liberalization of reproductive health policy or the liberalization of migration.

As a result, we regress the destination-year level shocks on the following destination-year level controls: the share of total Filipino OFWs to that destination, the share of domestic helpers to that destination out of total OFWs, and the share of remittances from that destination to the Philippines. Following Borusyak, Hull and Jaravel (2020), we weight the regressions by the average exposure share for the destination across municipalities. The results are shown in Appendix Table 3, where each covariate enters individually and then in Column 4, we include all three controls and check the omnibus F-test. In Panel A, we reject the null hypothesis that the controls are

jointly equal to zero. To solve this imbalance, Borusyak, Hull and Jaravel (2020) require that the exposure-weighted destination controls are included in the main specification. In Panel G of Table 7, we include these controls. Because remittance data were not available for all destinations, the sample size is slightly smaller than in Panel A (564,320 in Panel A vs. 514,910 in Panel F). Panel F shows the results on the smaller sample without the controls. The results are almost identical across Panels F and G, suggesting that the imbalance shown in Appendix Table 3 does not lead to bias in the results.

Borusyak, Hull and Jaravel (2020) also indicate that no destination should account for a substantial portion of migrant contracts for the municipalities on average. In our data, Saudi Arabia represents 38% of contracts on average across municipalities. The next most important destination is a mere 7% of contracts on average. As a results, Saudi Arabia should be excluded from the construction of our shock variables and removed from our analysis. When we examine the falsification check shown in Appendix Table 3 without Saudi Arabia (Panel B), we cannot reject the null hypothesis that the controls are jointly significant. While in a future version of the paper, we will likely make this our main specification, we currently show this as a robustness check in Appendix Table 2, Column 5. The result is a larger decline in fertility in response to increased liberalization.

Our analysis uses a constructed retrospective panel from repeated cross-sections of the PDHS. While in the cross-section the data is nationally representative, birth cohorts are not. More specifically, the further back the constructed sample extends the less representative a particular cohort is due to selective mortality. Our main analytical sample includes all birth years up to and including 18 years prior to the implementation of a specific DHS survey round. To investigate whether this sample selection is driving our results we perform several tests. First, we run our main analysis restricting the observations to only the year in which the DHS was collected. Second, we restrict analysis to the 3 year period prior to DHS data collection. The results are comparable to our main results, ruling out the possibility that sample selection concerns arising from the constructed panel are driving our findings.[15]

We further test the sensitivity of the results to our choice of how to code the policies. In Appendix Table 2, we show that the results are robust to whether we impute the missing policy

[15]As a specification check (results not shown), we also examine whether women of prime-child bearing age are those driving our results. To do so we implement a triple difference in differences estimation strategy using mother's age at the time of birth as our third source of variation. We create a binary variable equal to one if the mother is of prime child bearing age, which we define as between ages 20 and 39. Between 20-25 percent of women have given birth by the age 20, increasing rapidly to 60 percent by age 25 across DHS rounds (DHS, 1998, 2003, 2008, and 2013). Encouragingly, our results are driven by women of childbearing age.

information with zeros rather than keep them as missing as in our main results (Columns 2). A further concern with the policy coding is that for the sterilization index, policy changes often lead to sterilization policy becoming unclear and thus difficult to score. To ensure that this policy uncertainty is not driving the results, we omit the sterilization sub-index from the composite index and find similar results (Column 3). We also modify the treatment of self-governing territories and special administrative regions. Our results are robust to excluding the variation from temporary migrants to these destinations (Column 4).

There is substantial variation in the share of migrant flows to different countries; this might raise the concern that our identified effects are driven by a particular policy change in one of the top destinations. While a valid concern, this does not seem to be the case. In Appendix Table 2, Columns 6 through 8, restrict analysis to the top 5, 10 and 20 destinations respectively. Our main coefficient of interest is very stable regardless of the subset of countries used. This suggests that a 1 SD change in the migrant-weighted liberalization index is similar across subsets of destination countries. As an additional specification check, we consider the top ten destinations individually. In five of the ten cases, countries experienced at least one policy changes that impacted their liberalization index within our sample period. In four of these cases the reproductive health policy environment became more liberal, and in one case less liberal (Malaysia). While coefficients do vary by country, we do see that for most individual countries as the weighted liberalization policy index increases fertility declines; however, this is only statistically significant for Malaysia. Bahrain is a notable exception with a large positive coefficient.

To maximize the sample period of study our main specification relies on migration base shares calculated based on 1992 municipality specific destination flows. We examine our results using instead the 1993 municipality specific destination flows and demonstrate that our results are not sensitive to this choice. A further concern is whether our results are driven by anticipation effects, that is, prior to the policy being adopted active discussions within the country pertaining to contraceptive policies may drive our results. In Appendix Table 4, we control for the 5-year average of the liberalization index in the future. Our main results are not sensitive to the inclusion of this control and the lead variable itself is not predictive of current fertility.

7 Conclusion

Exposure to different cultural practices in destination countries may affect the behavior and preferences of temporary migrants. Upon return to their country of origin, these migrants may transmit this knowledge to their communities of origin. In this paper, we examine the effect of exposure to more open reproductive health policies due to temporary contract migration on fertility decisions in the Philippines. We find that fertility declines in response to exposure to more "liberalized" reproductive health policies. This was achieved by switching from traditional to more modern contraceptive methods, namely the pill. Our identification strategy eliminates concerns that our results are due to increased income from migration leading to fertility declines. Instead, our results suggest that declining fertility is driven by changes in preferences, namely in terms of the ideal number of children.

Our results emphasize the important influence that destination countries have on migrant origin countries. While the migration literature has repeatedly documented the many ways in which international migration affects origin countries, our results on fertility highlight a channel that has received limited attention. Inasmuch as changes in fertility impact long run development, our results suggest that this transmission of behavior is another mechanism through which migration may affect origin-country development.

8 References

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9 Figures

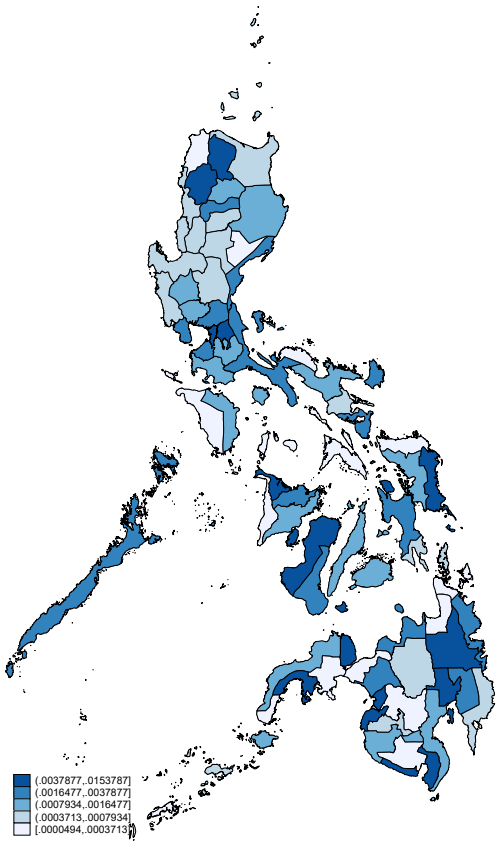

Figure 1: Base Migration Rate by province (1992)

Figure 2: Pill Scoring Mechanism

Scoring	0	1	2	3
Sale purpose	illegal	non-contraceptive	contraceptive	
Sale location	illegal	pharmacy	shop	
Prescription requirement	illegal	prescription required	no prescription required	
Subsidy	illegal	commercially available	subsidized	free
Commercial advertising	illegal	legal via reproductive health education programs, or advertising only to doctors and pharmacies	legal with some restrictions	legal without restrictions

Reproduced from Finlay et al.

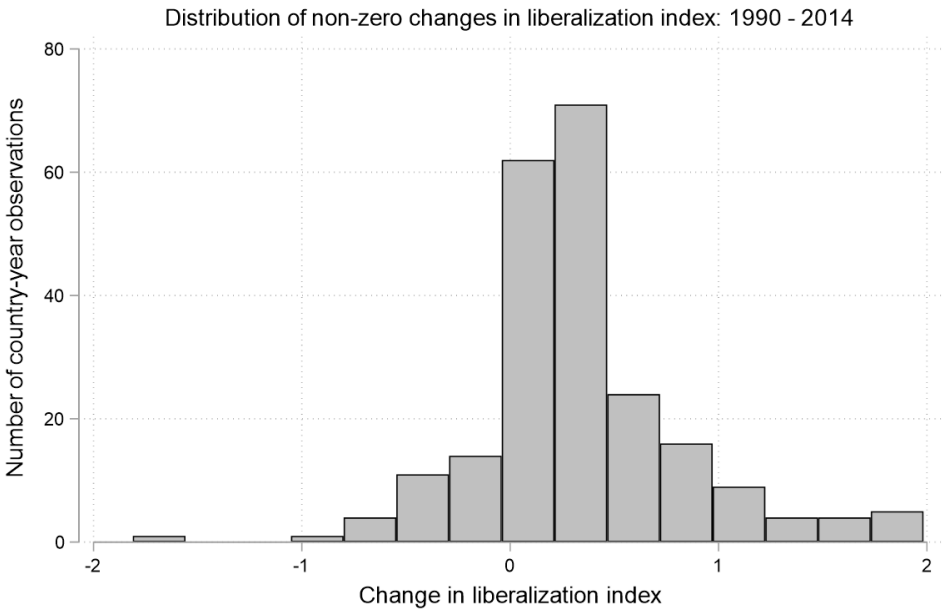

Figure 3: Distribution of non-zero changes in the weighted liberalization index: 1990-2013

Table 1: Summary Statistics in DHS Sample

	N	All	Base Migration in Low	High
	(1)	(2)	(3)	(4)
Panel A. Demographics				
Mother's age	564,320	33.293	33.746	33.098
Catholic	564,320	0.771	0.691	0.806
Mother's schooling				
No education	564,320	0.021	0.041	0.012
Primary education	564,320	0.235	0.352	0.185
Secondary education	564,320	0.408	0.378	0.421
Tertiary education	564,320	0.336	0.229	0.382
Urban	564,320	0.490	0.214	0.609
Married	564,320	0.645	0.716	0.615
Panel B. Outcomes				
Births	564,320	0.129	0.157	0.116
Births (Census Data)	8,149	0.099	0.106	0.093
Currently using:				
... any contraceptive method	137,850	0.305	0.325	0.297
... any modern method	137,850	0.172	0.167	0.175
... any traditional method	137,850	0.147	0.174	0.136
... contraceptive pill	137,850	0.072	0.074	0.071
... IUD	137,850	0.025	0.032	0.021
... injectable	137,850	0.016	0.019	0.015
... condoms	137,850	0.010	0.011	0.010
... sterilization	137,850	0.055	0.037	0.062
Panel C. Additional Outcomes				
women's perceptions of fertility and birth spacing	56,940	-0.034	0.037	-0.064
knowledge of contraceptive methods	56,940	4.039	3.914	4.092
attitudes towards family planning	56,940	0.001	0.032	-0.013
women empowerment	56,921	-0.151	-0.186	-0.137
attitudes towards contraception (mostly husband disapproves)	7,470	0.016	0.023	0.011
partners' perceptions of fertility and birth spacing as reported by women	33,241	0.216	0.241	0.203

Notes: Low refers to municipalities that have below median baseline migration, whereas high refers to municipalities that have above median baseline migration, where baseline is defined as 1992. Source: Philippine DHS.

Table 2: Summary Statistics on Baseline Migration (Municipality-Level)

	All Municipalities		Low Baseline		High Baseline	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
	(1)	(2)	(3)	(4)	(5)	(6)
Baseline Migrants Per 1,000 Residents						
All Migrants	2.066	2.975	0.204	0.207	3.548	3.303
Female Migrants	1.080	1.788	0.125	0.139	1.841	2.104
Male Migrants	0.986	1.709	0.079	0.104	1.707	2.017
Domestic Helper	0.673	1.196	0.077	0.098	1.147	1.434
Domestic Helper Plus Caregiver Migrants	0.673	1.197	0.077	0.098	1.148	1.434
Female Non-Domestic Helper Plus Caregiver Migrants	0.424	0.773	0.049	0.075	0.722	0.933
Number of Destinations at Baseline	8.557	8.092	2.702	2.973	13.219	7.845
Baseline Migrants Per 1,000 for Top 20 Destinations						
1. Saudi Arabia	1.055	1.899	0.089	0.112	1.824	2.267
2. Japan	0.158	0.420	0.016	0.037	0.271	0.536
3. Hong Kong	0.172	0.346	0.012	0.035	0.299	0.422
4. United Arab Emirates	0.142	0.247	0.018	0.040	0.240	0.294
5. Kuwait	0.038	0.069	0.006	0.020	0.064	0.083
6. Bahrain	0.059	0.148	0.008	0.025	0.099	0.187
7. Qatar	0.063	0.244	0.007	0.024	0.108	0.319
8. Malaysia	0.059	0.141	0.007	0.024	0.101	0.176
9. Brunei Darussalam	0.040	0.083	0.005	0.017	0.068	0.102
10. Northern Mariana Islands	0.030	0.062	0.003	0.015	0.051	0.076
11. Singapore	0.026	0.050	0.007	0.027	0.042	0.059
12. United States	0.012	0.029	0.002	0.009	0.019	0.036
13. Oman	0.024	0.067	0.004	0.013	0.040	0.086
14. Libya	0.012	0.029	0.001	0.008	0.020	0.036
15. Guam	0.007	0.027	0.001	0.012	0.011	0.033
16. Taiwan	0.006	0.021	0.000	0.000	0.012	0.026
17. Greece	0.013	0.094	0.001	0.016	0.023	0.124
18. Lebanon	0.006	0.019	0.001	0.005	0.010	0.025
19. Iran	0.005	0.033	0.000	0.002	0.009	0.044
20. Yemen	0.005	0.049	0.000	0.004	0.009	0.066

Notes: Baseline refers to the first year of the sample, 1992. High (low) baseline migration means a municipality had a migration rate above (below) the median in 1992. Sources: POEA and OWWA.

Table 3: Policy Variation

Panel A. Policy changes (country-level)			Number of policy changes			
	N	% Any chang	Mean	SD	Min	Max
	(1)	(2)	(3)	(4)	(5)	(6)
All policy types	214	0.659	3.369	4.333	0.000	22.000
Abortion	214	0.257	0.743	1.455	0.000	6.000
Pill	214	0.407	1.210	2.085	0.000	10.000
Condom	214	0.327	0.706	1.350	0.000	8.000
IUD	214	0.121	0.257	0.728	0.000	3.000
Sterilization	214	0.243	0.467	0.696	0.000	3.000

Panel B. Liberalization index summary statistics								
	Full Sample				Base Year		End Year	
	Mean	SD	Min	Max	Mean	SD	Mean	SD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Abortion (% of max. liberalization)	57.882	35.123	0.000	100.000	56.277	35.618	60.229	34.660
Pill (% of max. liberalization)	61.345	15.922	0.000	100.000	59.172	16.504	62.639	15.769
Condom (% of max. liberalization)	61.463	18.938	0.000	100.000	58.450	19.274	63.264	18.694
IUD (% of max. liberalization)	70.826	31.594	0.000	100.000	68.717	33.364	71.668	30.610
Sterilization (% of max. liberalization)	83.922	21.736	33.330	100.000	82.079	23.791	85.689	19.257
Standardized index	0.272	0.659	-2.006	1.508	0.185	0.689	0.337	0.631

Panel C. Municipality level variation					
	N	Mean	SD	Min	Max
	(1)	(2)	(3)	(4)	(5)
Any policy change (muni-level)	1634	1.000	0.000	1.000	1.000
Num instances of a policy change (muni-level)	1634	4.491	3.044	1.000	17.000
Weighted change in policy index relevant to municipality (muni-level)	1634	7.502	5.333	-5.799	18.851

Panel D. Fertility Sample	N=564320			
High liberalization index	0.275	0.447	0.000	1.000
OFW/Population (in 1992)	0.003	0.004	0.000	0.028
Weighted (by 1992 OFW destination flows) lib. index	-0.603	0.513	-1.966	1.352

Source: Finlay et al. (2012), POEA, and OWWA.

Table 4: Effect of Reproductive Health Liberalization on Fertility

	Main Specification	Female Variation	Male Variation	Domestic Helper Variation	Domestic Helper Plus Care Giver Variation	Non-Domestic Helpers (Female)
Panel A: Census Fertility Rates						
Base Migration X Weighted Liberalization Index	-1.015***	-1.667**	-0.554**	-2.449***	-2.449***	-2.257*
	(0.331)	(0.650)	(0.261)	(0.802)	(0.801)	(1.342)
Weighted Liberalization Index	0.002	-0.001	0.001	-0.002**	-0.002**	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Base Migration Rate (1992)	-1.676***	-2.258***	-2.011***	-2.458***	-2.458***	-5.169***
	(0.322)	(0.535)	(0.379)	(0.547)	(0.547)	(1.315)
Observations	8,149	8,149	8,149	8,149	8,149	8,149
Control mean	0.103	0.103	0.104	0.104	0.104	0.104
Panel B: DHS Births Data						
Base Migration X Weighted Liberalization Index	-1.819***	-4.403***	-1.298*	-5.383***	-5.385***	-6.511**
	(0.572)	(1.049)	(0.681)	(1.417)	(1.417)	(2.673)
Weighted Liberalization Index	0.003	-0.002	0.006*	-0.004	-0.004	0.002
	(0.005)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)
Base Migration Rate (1992)	-4.655***	-7.045***	-6.700***	-7.418***	-7.422***	-14.820***
	(0.833)	(1.559)	(1.204)	(1.900)	(1.901)	(3.453)
Observations	564,320	564,320	564,320	564,320	564,320	564,320
Control mean	0.162	0.162	0.163	0.162	0.162	0.161

Notes: Panel A uses data from the 1995, 2000, 2007, and 2010 100% Philippine Census of Population. Panel B uses data from the DHS to construct retrospective birth data for 1992-2013. In Column 1, the base migration rate is the municipality's total migration rate in 1992. The weighted liberalization index is weighted by the 1992 total destination shares for a given municipality. In the remaining columns, the base migration rate is the municipality's migration rate for the indicated subgroup, while the liberalization index is weighted by the destination shares of the indicated subgroup. All specifications include province and year fixed effects, province-specific linear time trends, and municipality-level destination shares at baseline. Robust standard errors are clustered at the municipality level. *** p<0.01, ** p<0.05, * p<0.10. Sources: DHS, POEA, OWWA, Census, and Finlay et al. (2012).

Table 5: Effect of Reproductive Health on Current Contraceptive Use

	Fertility (Census)	Fertility (DHS)	Modern methods	Traditional methods	Any contraceptive method	Pill	IUD	Injectable	Condom	Sterilization
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A. Full Sample										
Base migration rate X Weighted lib. index	-1.015***	-1.819***	4.492	-4.565*	0.040	2.830	0.793	0.466	0.174	0.167
	(0.331)	(0.572)	(3.152)	(2.499)	(3.839)	(1.782)	(1.046)	(0.864)	(0.522)	(1.912)
Control mean	8,149	564,320	137,850	137,850	137,850	137,850	137,850	137,850	137,850	137,850
Observations	0.103	0.162	0.168	0.156	0.309	0.082	0.034	0.015	0.008	0.035
Panel B. Wage Sample										
Base migration rate X Weighted lib. index	-0.916	-2.641***	3.348	-6.269*	-2.995	1.616	0.190	0.033	0.010	1.192
	(0.342)	(0.660)	(3.373)	(3.261)	(4.289)	(1.476)	(1.249)	(0.713)	(0.543)	(2.265)
Panel C. Wage Controls										
Base migration rate X Weighted lib. index	-0.919	-2.638***	3.345	-6.160*	-2.928	1.695	0.218	0.062	0.017	1.056
	(0.342)	(0.660)	(3.375)	(3.236)	(4.277)	(1.480)	(1.255)	(0.707)	(0.541)	(2.259)
Control mean	2,498	412,390	83,502	83,502	83,502	83,502	83,502	83,502	83,502	83,502
Observations	0.109	0.160	0.152	0.194	0.325	0.075	0.029	0.011	0.007	0.036

Notes: The sample period in Column 1 is from 1992-2013, while it is from 2003-2008 in the remaining columns. Panel B is the main specification shown in Panel A, but only for the sample for which average migrant wages are available. Panel C includes controls for average migrant wages in the municipality. All specifications include province and year fixed effects, province-specific linear time trends, and municipality-level destination shares at baseline. Robust standard errors are clustered at the municipality level. *** p<0.01, ** p<0.05, * p<0.10. Sources: DHS, POEA, OWWA, Census, and Finlay et al. (2012).

Table 6: Potential Mechanisms

	Standardized index of...					
	knowledge of contraceptive methods	women's perceptions of fertility and birth spacing	attitudes towards family planning	women empowerment	attitudes towards contraception (mostly husband disapproves)	partners' perceptions of fertility and birth spacing as reported by women
	(1)	(2)	(3)	(4)	(5)	(6)
Base Migration X Weighted Liberalizat	10.466	-11.042***	0.560	-7.577	-33.207**	-2.809
	(12.807)	(3.509)	(7.494)	(5.538)	(16.031)	(2.080)
Weighted Liberalization Index	-0.031	-0.033	-0.013	-0.068*	0.123	0.002
	(0.109)	(0.041)	(0.067)	(0.040)	(0.108)	(0.023)
Base Migration Rate (1992)	37.092**	-17.548***	-6.875	0.979	-38.533*	-3.413
	(16.029)	(3.554)	(5.398)	(4.392)	(21.091)	(2.328)
Observations	57,196	56,940	57,196	57,177	7,470	33,250
Control mean	3.716	0.070	0.126	-0.222	0.045	0.263

Notes: The sample period is 2003 and 2008. All specifications include province and year fixed effects, province-specific linear time trends, and municipality-level destination shares at baseline. Robust standard errors are clustered at the municipality level. *** p<0.01, ** p<0.05, * p<0.10. Sources: DHS, POEA, OWWA, Census, and Finlay et al. (2012).

Table 7: Robustness Checks for Fertility and Contraceptive Outcomes

	Fertility	Modern methods	Traditional methods	Any contraceptive method	Pill	IUD	Injectable	Condom	Sterilization
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A. Main Specification									
Base migration rate X Weighted liberlization index	-1.819***	4.492	-4.565*	0.040	2.830	0.793	0.466	0.174	0.167
	(0.572)	(3.152)	(2.499)	(3.839)	(1.782)	(1.046)	(0.864)	(0.522)	(1.912)
Panel B. Without Manila									
Base migration rate X Weighted liberlization index	-2.204***	5.826*	-3.433	2.380	3.160*	1.264	0.533	0.119	0.680
	(0.723)	(3.284)	(2.516)	(3.865)	(1.885)	(1.072)	(0.915)	(0.544)	(1.980)
Panel C. Population Weighted									
Base migration rate X Weighted liberlization index	-1.812***	3.808	-5.320**	-1.161	3.259	0.465	0.856	0.310	-1.145
	(0.571)	(3.700)	(2.591)	(4.318)	(2.145)	(1.402)	(0.892)	(0.551)	(2.322)
Panel D. Base Liberalization Index									
Base migration rate X Weighted liberlization index	1.133**	4.584	-4.606*	0.132	3.073*	1.062	0.317	0.361	-0.304
	(0.478)	(3.163)	(2.569)	(3.870)	(1.785)	(1.051)	(0.867)	(0.507)	(1.917)
Panel E. Binary Specification									
Base migration rate X Weighted liberlization index	0.003	0.040	0.005	0.045	0.024*	0.009	0.000	-0.004	0.009
	(0.005)	(0.025)	(0.019)	(0.029)	(0.014)	(0.010)	(0.007)	(0.006)	(0.015)
Panel F. Destination Controls Restricted Sample									
Base migration rate X Weighted liberlization index	-1.478	4.737	-3.667	1.299	3.251*	0.729	0.512	0.316	-0.090
	(0.539)	(3.275)	(2.389)	(3.850)	(1.906)	(1.084)	(0.951)	(0.533)	(1.940)
Panel G. Plus Exposure-Weighted Destination Controls									
Base migration rate X Weighted liberlization index	-1.463	4.753	-3.609	1.361	3.262*	0.713	0.508	0.335	-0.079
	(0.542)	3.272943109	2.382638861	3.843026161	1.909304847	1.085411773	0.950079001	0.529160444	1.935660587

Notes: The sample period in Column 1 is from 1992-2013, while it is from 2003-2008 in the remaining columns. All specifications include province and year fixed effects, province-specific linear time trends, and municipality-level destination shares at baseline. Robust standard errors are clustered at the municipality level. *** p<0.01, ** p<0.05, * p<0.10. Sources: DHS, POEA, OWWA, Census, and Finlay, Canning and Po (2012).

Appendix Table 1: Disaggregated Policy Variation

Panel A. Pill-Specific Policy changes (country-level)			Number of policy changes			
	N	% Any change	Mean	SD	Min	Max
	(1)	(2)	(3)	(4)	(5)	(6)
Purpose	214	0.177570093	0.285046729	0.655823138	0	3
Location	214	0.107476636	0.107476636	0.310444459	0	1
Prescription	214	0.121495327	0.126168224	0.346636812	0	2
Subsidy	214	0.257009346	0.406542056	0.792069972	0	3
Advertising	214	0.242990654	0.271028037	0.523083912	0	3

Panel B. Condom-Specific Policy changes (country-level)						
			Number of policy changes			
	N	% Any change	Mean	SD	Min	Max
	(1)	(2)	(3)	(4)	(5)	(6)
Purpose	214	0.098130841	0.135514019	0.428284565	0	2
Subsidy	214	0.186915888	0.289719626	0.671475788	0	3
Advertising	214	0.23364486	0.26635514	0.502658458	0	3

Notes: This table outlines the nature of the policy changes. Sources: Finlay, Canning, and Po (2012) and authors' calculations.

Appendix Table 2: Fertility impacts - Robustness, policy variants

	Main Result	Only complete policies	Excluding Sterilization	Excluding Territories	Excludes Saudi Arabia	Top 5 destinations only	Top 10 destinations only	Top 20 destinations only
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Base migration rate X Weighted liber	-1.819***	-1.880***	-1.535**	-1.551**	-8.715*	-1.836***	-1.849***	-1.809***
	(0.572)	(0.573)	(0.602)	(0.601)	(4.478)	(0.559)	(0.576)	(0.573)
Weighted Liberalization Index	0.003	0.004	0.002	0.003	0.032	0.004	0.004	0.003
	(0.005)	(0.005)	(0.004)	(0.005)	(0.035)	(0.004)	(0.005)	(0.005)
Base Migration Rate (1992)	-4.655***	-4.730***	-4.524***	-4.539***	-3.003***	-4.685***	-4.694***	-4.650***
	(0.833)	(0.821)	(0.888)	(0.888)	(0.723)	(0.847)	(0.844)	(0.834)
Observations	564,320	564,320	564,320	564,320	564,320	564,320	564,320	564,320
Control mean	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162

Notes: The sample period is from 1992-2013. Column 1 shows the main specification. Column 2 calculates the weighted liberalization index based on only complete policies. Column 3 calculates the index using the four other types of liberalization and excluding sterilization. Column 4 excludes territories since they are assigned the policies of the country they are legally a part of. All specifications include province and year fixed effects, province-specific linear time trends, and municipality-level destination shares at baseline. Robust standard errors are clustered at the municipality level. *** p<0.01, ** p<0.05, * p<0.10. Sources: DHS, POEA, OWWA, Census, and Finlay et al. (2012).

Appendix Table 3: Falsification Check: Liberalization Index and Destination Characteristics

	Dependent Variable: Liberalization Index			
Panel A: Full Sample	(1)	(2)	(3)	(4)
Share of Contracts	-0.616			-1.228
	(0.730)			(0.840)
Share of Domestic Helper Contracts		1.067		-5.322**
		(0.645)		(2.507)
Share of Remittances			6.826***	7.364***
			(1.940)	(1.959)
Observations	2100	2100	1760	1760
Dep. Var. Mean	0.305	0.305	0.306	0.306
Dep. Var. St. Dev.	0.634	0.634	0.633	0.633
Joint F-test P-value				0.001
Panel B: Without Saudi Arabia				
Share of Contracts	-0.075			-0.031
	(0.114)			(0.076)
Share of Domestic Helper Contracts		-0.270		-0.190
		(0.392)		(0.531)
Share of Remittances			-0.219	-0.172
			(0.338)	(0.315)
Observations	2,075	2,075	1,738	1,738
Dep. Var. Mean	0.322	0.322	0.324	0.324
Dep. Var. St. Dev.	0.616	0.616	0.611	0.611
Joint F-test P-value				0.864

Notes: This table shows regressions of the destination-country level liberalization index on destination country characteristics, weighted by the average exposure share across municipalities. The sample period is from 1992 to 2013. Panel A shows the results for all destinations, while Panel B excludes Saudi Arabia due to its high average exposure share across municipalities in the baseyear, following Borusyak, Hull and Jaravel (2020). Robust standard errors are clustered at the jobsite level. *** p<0.01, ** p<0.05, * p<0.10. Sources: DHS, POEA, OWWA, Census, and Finlay et al. (2012).

Appendix Table 4: Fertility Impacts: Leads)

	Fertility (DHS)	Modern methods	Traditional methods	Any contraceptive method	Pill	IUD	Injectable	Condom	Sterilization
Base Migration X Weighted Liberalization Index	-1.888***	5.542	-7.093**	-1.397	4.068**	0.922	0.349	-0.053	0.215
	(0.563)	(3.589)	(2.936)	(4.290)	(2.069)	(1.299)	(0.883)	(0.647)	(2.090)
Base Migration X Weighted Liberalization Index	0.435	-1.213	2.965**	1.685	-1.414	-0.188	0.121	0.274	-0.026
(1, 2, 3, 4, 5 yr lead avg)	0.593661678	1.745331723	1.262071652	1.9531895	0.967420002	0.657355602	0.419223577	0.4011456	1.172810402
Observations	564,320	137,850	137,850	137,850	137,850	137,850	137,850	137,850	137,850
Control mean	0.129	0.172	0.147	0.305	0.072	0.025	0.016	0.010	0.055

Notes: The sample period in Column 1 is from 1992-2013, while it is from 2003-2008 in the remaining columns. All specifications control for the year one through five average lead, as well as include province and year fixed effects, province-specific linear time trends, and municipality-level destination shares at baseline. Robust standard errors are clustered at the municipality level. *** p<0.01, ** p<0.05, * p<0.10. Sources: DHS, POEA, OWWA, Census, and Finlay et al. (2012).

Appendix A. Reproductive health policy year imputations

We measure reproductive health policies in the destination countries of OFWs using a set of indices compiled by Finlay, Canning and Po (2012). They construct decade specific reproductive health policy indices based on the prevailing reproductive health laws in 186 countries. They compile separate indices for abortion, condom, pill, IUD, and sterilization laws. For each index, a set of criteria is defined against which the policies of each country are scored. Figure 1 below reproduces their overall scoring algorithm.

		Index value			
		0	1	2	3
Abortion					
	Life threatening	illegal	legal		
	Physical health	illegal	legal		
	Mental health	illegal	legal		
	Rape	illegal	legal		
	Fetal impairment	illegal	legal		
	Economic	illegal	legal		
	Request	illegal	legal		
Contraceptive pill					
	Sale Purpose	illegal	non-contraceptive	contraceptive	
	Sale Location	illegal	pharmacy	shop	
	Prescription Requirement	illegal	prescription required	prescription not required	
	Subsidy	illegal	commercially available	subsidized	free

	Commercial Advertising	illegal	legal via RH education programs, or advertising only to doctors and pharmacies	legal without restrictions	legal without restrictions
Condom					
	Sale Purpose	illegal	non-contraceptive	contraceptive	
	Subsidy	illegal	commercially available	subsidized	free
	Commercial Advertising	illegal	legal via RH education programs, or advertising only to doctors and pharmacies	legal without restrictions	legal without restrictions
IUD					
	Legal	illegal	legal		
	Doctor Installs	illegal	doctor only inserts	doctor or other inserts	
Sterilization					
	Legal	illegal	permitted for therapeutic, eugenic, medical or health reasons only	legal status unclear	permitted for contraceptive purposes

Source: Finlay et al. (2012), reproduction of Table 1.

While this dataset is decade-specific, for our purposes it is important to know the precise year in which a policy changed. This appendix outlines our approach to imputing the precise year in which a policy changed. First, we identified all reproductive health policy changes recorded in the Finlay et al. (2012) dataset that are relevant to our analysis. This includes all policy changes occurring after 1990 for any country that had at least one registered Overseas Filipino Worker in 1992. For each identified change, listed in table 2, we identified the relevant policy to determine the year in which it was enacted. We relied heavily on the sources identified by Finlay et al. (2012), specifically: Boland, Reed. *Annual Review of Population Law.*, Ross, J., S. Hong and Douglas H. Huber. "Voluntary

sterilization: an international fact book." *Studies in Family Planning* 16 (1985), *Annual Review of Population Law*. 1987. Harvard Law and UNFPA. Table 2 summarizes the precise year chosen and the corresponding source.

Country	Decade of change	Component of liberalization index	Type of policy change (words behind the finlay numbers)	Year of change	Explanation	Reference material	Citation
Algeria	2000-2009	Sterilization	1 to 2 (1= permitted for therapeutic, eugenic, medical or health reasons only, 2 = legal status unclear)	2000	Chapter 4 of Engenderhealth's "Contraceptive Sterilization: Global Issues and Trends" says that the change occurred between 1985 and 2001. Finlay et al. say that the change occured between 2000 and 2009. If both sources are accurate, the change must have occured between 2000 and 2001.	https://www.engenderhealth.org/files/pubs/family-planning/factbook_chapter_4.pdf	*Contraceptive Sterilization: Global Issues and Trends.* 2002. New York City: EngenderHealth.
Bahrain	2000-2009	Sterilization	Sterilization: 2 to 1 (1= permitted for therapeutic, eugenic, medical or health reasons only, 2 = legal status unclear)	2000	Chapter 4 of Engenderhealth's "Contraceptive Sterilization: Global Issues and Trends" says that the change occurred between 1985 and 2001. Finlay et al. say that the change occured between 2000 and 2009. If both sources are accurate, the change must have occured between 2000 and 2001.	https://www.engenderhealth.org/files/pubs/family-planning/factbook_chapter_4.pdf	*Contraceptive Sterilization: Global Issues and Trends.* 2002. New York City: EngenderHealth.
Belgium	2000-2009	Sterilization	Sterilization: 1 to 3 (1= permitted for therapeutic, eugenic, medical or health reasons only, 3= permitted for contraceptive purposes)	2007	Book I, Title II, Chapter II of the Civil Code, Article 62a ammends the Civil Code to say that any transgender person who undergoes surgery to change their sex must also be sterilized.	https://www.global-regulation.com/translation/belgium/3033677/law-on-transsexuality.html	Kingdom of Belgium. "Law On Transsexuality**."** 2007. Global Regulation.
Botswana	1990-2000	Abortion	Abortion: 0 to 1 for the categories "life threatening," "physical health of the mother,"	1991	In 1991, an ammendment to the Penal Code bill changed Botswana's laws from prohibiting all abortions to allowing them within the first sixteen weeks if the abortion protected the	https://www.ncbi.nlm.nih.gov/pubmed/12288837	Mogwe, A. 1992. "Botswana: abortion 'debate' dynamics" Agenda (12).

			“mental health of the mother,” “rape or incest,” “fetal impairment,” “economic,” “on request” (0=illegal, 1=legal)		physical or mental health of the mother, the pregnancy was a product of rape or incest, or the fetus was seriously disabled. The law was highly contested but passed. (see reference)		
Cameroon	1990-2000	Condom and Pill	Pill advertising: 0 to 1 (0=illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies) Condom advertising 0 to 1 (0=illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies)	1990	In 1990, Act No. 90/035, Chapter V, Articles 19 and 20 amended Cameroon's pharmaceutical advertising to mandate that "the regulating authority" would consult "The Council of the Order of the Pharmacists" before establishing advertising regulations. The same Act also prescribed specific fines to punish entities that violate these regulations.	http://www.iracm.com/wp-content/uploads/2013/01/loi-n°-90-035-anglais-3208.pdf	Organisation de la profession de pharmacien de Cameroon. “La profession de pharmacien.” 1990.
China	2000-2009	Condom and Pill	Pill advertising: 1 to 2 (1=legal via RH education programs, or advertising only to doctors and pharmacies, 2=legal with restrictions) Condom advertising 1 to 2 (1=legal via RH education programs, or advertising only to doctors and	2002	In 1998, a commercial condom advertisement appeared for the first time, however advertising was’t legalized until 2002, with the hopes of preventing the spread of HIV. In 2003, the first "officially-endorsed" condom advertisement appeared on television.	http://www.cnn.com/2002/HEALTH/12/02/china.condoms/	“China to lift condom ad ban.” *CNN*, 12/2/2002.

			pharmacies, 2=legal with restrictions)				
Cuba	2000-2009	Sterilization	Sterilization: 2 to missing (2 = legal status unclear)	2008	Cuba's Resolucion 126 de 2008: "The functions of the Center for Comprehensive Health Care for Transsexual People are: a) provide comprehensive health services, which include the study, diagnosis, treatment, care research and monitoring of transsexual people. b) Carry out, according to the medical protocols of action, the treatment required by each transsexual person. c) Coordinate with the Assistance Unit of the National Public Health System, headquarters of the center, other care procedures that transsexuals require during their comprehensive care at the Comprehensive Health Care Center for transsexual persons."	https://salud.msp.gob.cu/wp-content/uploads/2019/02/RM_126_2008.pdf	República de Cuba Ministerio De Salud Pública. "Resolución Ministerial N0. 126." 2008.
Cyprus	2000-2009	Sterilization	Sterilization: 3 to 2 (2 = legal status unclear, 3=permitted for contraceptive purposes)	2004	AIDS Strategic Plan 2004-2008: "Women and their partners should have the possibility to know their HIV status and to make informed reproductive choices. Couples who are HIV positive will be advised on the risk of perinatal transmission, as well as the risk transmission of the virus between partners, and will be offered the alternatives of safe sex and contraception. The final decision will be made by the couple. Free counselling and confidential testing to all couples are offered through the existing counselling services in Nicosia, Larnaca and Limassol in the Government sector, by the CFPA and by private gynaecologists."	https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---ilo_aids/documents/legaldocument/wcms_127463.pdf	Cyprus Ministry of Health. "Cyprus HIV/AIDS Strategic Plan 2004 – 2008." 2004.
Ethiopia	1990-2000	Pill and Condom	Pill: Commercial advertising 0 to 1 (0= illegal, 1=legal via RH education programs, or	1993	National Population Policy calls for, but does not mandate, the elimination of regulations surrounding contraceptive advertisements (Source 1). The 1993 National Policy on Women	Source 1: https://cyber.harvard.edu/populati	Source 1: Federal Democratic Republic of Ethiopia. "Ethiopia National Population Policy of April

			advertising only to doctors and pharmacies) Condom: Commercial advertising 0 to 1 (0= illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies)		dictates that information regarding family planning should be provided to all women. Health Policy calls for, but does not mandate, an intersectoral intensification of family planning and the use of mass media to promote awareness of communicable diseases and means of preventing their spread (Source 2).	on/policies/ETHIOPIA.htm Source 2: https://www.cmpethiopia.org/media/health_policy_of_ethiopia_1993	1993." 1993. Harvard Population Policies. Source 2: "Health policy of Ethiopia 1993." 1993. Community Managed Project Approach Ethiopia.
Ethiopia	1990-2000	Sterilization	Sterilization: 3 to 2 (2 = legal status unclear, 3=permitted for contraceptive purposes)	1994	New constitution in 1994 because of regime change. According to article 35 subsection 4, "The State shall enforce the right of women to eliminate the influences of harmful customs. Laws, customs and practices that oppress or cause bodily or mental harm to women are prohibited." Pretty sure this includes sterilization, as the previous sterilization law was just anti-amputation. Additionally, "To prevent harm arising from pregnancy and childbirth and in order to safeguard their health, women have the right of access to family planning education, information and capacity."	https://www.constituteproject.org/constitution/Ethiopia_1994.pdf?lang=en	"Ethiopia's Constitution of 1994." 1994. The Constitution Project.
Ethiopia	2000-2009	Abortion	Abortion: went from 0 to 1 for the category "rape or incest" (0=illegal, 1=legal)	2005	In 2005, Article 551 in Section II of Ethiopia's Penal Code was revised to allow the abortion of pregnancies resulting from rape or incest.	https://www.reproductiverights.org/sites/default/files/documents/crr_Ethiopia_Abortion_Law_English.pdf?_ga=2.169654689.1810669331.1581012665-1542439081.1581012665	"Ethiopia Abortion Law." 2005. Reproductive Rights Organization.

France	1990-2000	Condom and Pill	Pill advertising: 1 to 2 (1=legal via RH education programs, or advertising only to doctors and pharmacies, 2=legal with restrictions) Condom advertising 1 to 2 (1=legal via RH education programs, or advertising only to doctors and pharmacies, 2=legal with restrictions)	1991	In 1991, Article 7. I. Article 5 of Act No. 67-1178 was amended to read as follows: "Article 5. All advertising ... relating to condoms and other contraceptives is subject to the provisions of the Article L. 551 of the Code of Public Health. Up to this point, Article 5 had banned all commercial advertisements related to contraceptives, with the exception of advertisements to physicians and pharmacists. The amendment loosened contraceptive advertisement regulations to align them with advertisement regulations for other medical products.	https://heinonline-org.ezproxy2.williams.edu/HOL/Page?collection=journals&handle=hein.journals/anpop18&id=70&men_tab=srchresults	Boland, Reed. ed. 1991 *Annual Review of Population Law.* Volume 18. *1991 Review of Population Law.*
France	2000-2009	Pill	Pill advertising: 1 to 2 (1=legal via RH education programs, or advertising only to doctors and pharmacies, 2=legal with restrictions)	2000 (passed 1999)	Annex 1 c) of the 1999 Social Security Financing Law for 2000 states that "an information ... plan to guarantee the effective exercise of the right to contraception has been initiated"	https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000214048&fastPos=1&fastReqId=1402256981&categorieLien=id&oldAction=rechTexte	French Republic. “Loi no. 99-1140 du 29 décembre 1999 de financement de la sécurité sociale pour 2000.” 2000. Légifrance.
Gabon	1990-2000		Condom: --Sale purpose: 1 to 2 (1= non-contraceptive , 2= contraceptive) Pill: --Sale purpose: 1 to 2 (1=non-contraceptive, 2=contraceptive) IUD:	1990	The 1990 change: "Addition to the Constitution of the principle of the equality of all citizens, regardless of their gender (1990); Repeal, the same year, of Ordinance No. 64/69 of 4 October 1969 forbidding the use of contraceptives, and recognition of the right to contraception under the 1990 National Charter of Freedoms; Adoption of Act No. 1/2000 of 18 August 2000, setting out measures to protect the health and social rights of women, mothers and children,	(https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwikvp_R96rtAhVCqZ4KHXU5AEkQFjADegQIAxAC&url=http%3A%2F%2Fdocstore.ohchr	“Gabon: Consideration of reports submitted by States Parties under article 18 of the Convention on the Elimination of All Forms of discrimination against Women.” United Nations Committee on the Elimination of Discrimination against Women.

			--Legal: 0 to 1 (0=illegal, 1=legal) --Doctor Installs: 0 to 1 (0=illegal, 1=doctor only installs)		thereby repealing the aforementioned Ordinance No. 64/69."	.org%2FSelfServices%2FFilesHandler.ashx%3Fenc%3D6QkG1d%252FPPRiCAqhKb7yhsldCrOlUTvLRFDjh6%252Fx1pWCjQBMnf22ONHOluK1%252FC9xBa0UCOIEVZ6vr0LEpKT8uZVjVyg3flUksFW0pt%252BxTpN4sXLjvWnbxuVSW%252BPLQ2PUE&usg=AOvVaw2VlNDGEpEonssx96YDz8gL)	
Gabon	1990-2000	Condom and Pill	Condom: --Subsidy: 1 to 3 (1= commercially available , 3= free) Pill: --Subsidy: 1 to 3 (1=commercially available, 3=free)	1991	The CONSTITUTION of the Gabonese Republic Law N ° 3/91 of March 26, 1991: “The State, according to its possibilities, guarantees to everyone, especially the child, the mother, the disabled, the old workers and the elderly, health protection, social security, a natural environment preserves, rest and leisure; The family is the natural building block and the foundation of society. It must be protected by the State, which must take care of its physical and moral health. The government responded to this amendment by making health care at public health facilities free for many demographics.”	https://www.refworld.org/pdfid/3ae6b53510.pdfhttp://documents.worldbank.org/curated/en/875521468252026617/pdf/Health-financing-in-the-Republic-of-Gabon.pdf (pages 62 and 63) , https://www.constituteproject.org/constitution/Gabon_2011.pdf?lang=en	Finlay, Jocelyn, Canning, David, and Po, June. 2012. “Reproductive Health Laws Around the World.” PGDA Working Paper No. 96.

Gabon	1990-2000	Condom and Pill	Condom: --Commercial Advertising: 0 to 1 (0= illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies) Pill: --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies)	1995	In 1995, Gabon responded to pressures on the reproductive healthcare system, the government began a program to increase contraception education. Funds from UNESCO were used to finance it (Source 1). In 1995, General Provision 3 of Ordinance No. 1/95 mandated that the state guarantee medical care to everyone. Even if the ordinance was an amendment to a previous law, Provision 3 was probably a change to this previous law because the author describes the Provision as being of "principle" importance (Source 2).	Source 1: https://unesdoc.unesco.org/ark:/48223/pf0000115663 Source 2: https://heinonline-org.ezproxy2.williams.edu/HOL/Page?collection=journals&handle=hein.journals/anpop21&id=908&men_tab=srchresults	Source 1: Khouri-Dagher, Nadia. Simard, Tony. *Gabon: breaking the silence.* 1999. UNESCO. Source 2: Boland, Reed. ed. 1994-1995 *Annual Review of Population Law.* Volume 21-22. *1994-1995 Review of Population Law.*
Ghana	1990-2000	Condom and Pill	Pill: --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies) Condom: --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs, or advertising only to	1994	The National Population Policy section 5.11.1.7, states that "there shall be mobile film units, radio, television and newspapers at community information centres which will be set up [to promote family planning]."	https://npc.gov.gh/wp-content/uploads/2019/01/National-Population-PolicyRevised-Edition-1994.pdf	Republic of Ghana. "National Population Policy." 1994. National Population Council.

			doctors and pharmacies)				
Guyana	1990-2000	Abortion	Abortion change 0 to 1 for the categories "life threatening," "physical health of the mother," "mental health of the mother," "rape or incest," "fetal impairment" (0=illegal, 1=legal)	1995	In 1995, The Medical Termination of Pregnancy Act permited abortions if they protected the mental or physical health of the mother (subsection 6 b. i.), prevented the mother from giving birth to a disabled child (subsection 6 b. ii.), or the pregnancy was a result of rape or incest (subsection 6 c.)	http://parliament.gov.gy/documents/acts/6013-7_of_1995_medical_termination_of_pregnancy_act_1995.pdf	Co-operative Republic of Guyana. "Guyana Medical Termination of Pregnancy Act 1995." 1995.
Guyana	1990-2000	Sterilizatio n	Sterilization: Sterilization legal 3 to 2 (2 = legal status unclear, 3=permitted for contraceptive purposes)	2000	According to Finlay et. al, the change occurred between 1990 and 2000. Due to our inability to find supporting documentation of the precise year the policy was implemented we follow Finlay et al. and the year 2009 was used for the purposes of this paper.		Finlay, Jocelyn, Canning, David, and Po, June. 2012. "Reproductive Health Laws Around the World." PGDA Working Paper No. 96.
Guyana	2000-2009	Abortion	Abortion change 0 to 1 for the categories "economic," "on request" (0=illegal, 1=legal)	2008	The report explained that, "Abortion is legal in Guyana under the Medical Termination of Pregnancy Act No. 7. of June 14, 1995." But "in 2008, the Government theoretically cleared the way for public hospitals to perform abortion, but public hospitals only provided abortions to women with on-going complications like incomplete abortions." The Poverty Reduction Strategy Programme II makes it legal for public hospitals to perform abortions.	https://www.kaieteurnewsonline.com/2018/11/05/guyana-has-most-progressive-abortion-laws-in-the-caribbean/ , https://finance.gov.gy/wp-content/uploads/2017/06/prsp.pdf	"Guyana has most progressive abortion laws in the Caribbean." 2018. Kaieteur News. Cooperative Republic of Guyana. "The Guyana Poverty Reduction Strategy Paper." 2017.
India	1990-1999	Pill and Condom	Pill: --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education	1992	Volume II, Chapter 12, Strategy XVII of the Eighth Five Year Plan (1992-1997) began the social marketing of contraceptive pills. Strategy XVIII expands Information, Education, and Communication (IEC) programs surrounding	https://heinonline-org.ezproxy2.williams.edu/HOL/Page?collection=journals&han	Boland, Reed. ed. 1992 *Annual Review of Population Law.* Volume 19. *1992 Review of Population Law.*

			programs, or advertising only to doctors and pharmacies) Condom: --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies)		family planning. India National AIDS Control Programme (NACP) began in1992 with an emphasis on awareness/education as a form of prevention, as well as condom promotion.	dle=hein.journals/anpop19&id=204&men_tab=srchresults , http://documents.worldbank.org/curated/en/452611468050986605/Social-Assessment-Report	
India	1990-1999	Pill and Condom	Pill: --Subsidy: 2 to 3 (2=subsidized, 3=free) Condom: --Subsidy: 2 to 3 (2=subsidized, 3=free)	1995	"December 1995, a non-steroidal weekly Oral Contraceptive Pill, Centchroman (Popularly known as Saheli & Novex), to prevent pregnancy is also being subsidized under the Social Marketing Programme. The weekly Oral pill is the result of indigenous research of CDRL, Lucknow. The pill is now available in the market at Rs.2.00 per tablet. The Government of India provides a subsidy of Rs.2.59 per tablet towards product and promotional subsidy." The government then expanded this program in 2002-2003 to include more pill contraception and condoms. Starting 2003-2004 IUDs were introduced into the program.	https://india.unfpa.org/sites/default/files/pub-pdf/AssessmentofContraceptiveSocialMarketingProgramme_LowRes.pdf	Ministry of Health and Welfare, Government of India. “Assessment of Contraceptive Social Marketing Programme.” 2015.
Indonesia	1990-1999	Abortion	Abortion: 0 to 1 for the categories “life threatening” (0=illegal, 1=legal)	1992	Article 15 and 80 of Law NO. 23/1992 make it legal to perform abortions to save the life of the mother.	http://www.oit.org/dyn/natlex/docs/ELECTRONIC/91601/106308/F533412754/IDN91601%20Eng.pdf	The Republic of Indonesia. “Law of the Republic of Indonesia No. 23/1992.” 1992.

Indonesia	1990-1999	Condom and Pill	Pill: --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies) Condom: --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies)	1992	In 1992, Article 12, sub-section 2 of Indonesia's Law on Population Development and Prosperous Family restricted the ability to display birth control equipment to health workers and other authorized personnel.	https://cyber.harvard.edu/population/policies/INDONES.html	The Republic of Indonesia. "Law on Population Development and Prosperous Family of 1992." 1992.
Indonesia	2000-2009	Sterilization	Sterilization: legal 2 to 3 (2= legal status unclear, 3= permitted for contraceptive purposes)	2000	Sterilization became legal for contraceptive purposes in 2000 according to page 89 of Engender Health. .	https://www.engenderhealth.org/files/pubs/family-planning/factbook_chapter_4.pdf (Page 89)	*Contraceptive Sterilization: Global Issues and Trends.* 2002. New York City: EngenderHealth.
Iran	1990-1999	Condom and Pill	Pill: --Subsidy: 2 to 3 (2=subsidized, 3=free) Condom: --Subsidy: 2 to 3 (2=subsidized, 3=free)	1990	In 1990 Iran established the Birth Limitation Council that gave free contraception: "The objectives of the programme designed by the Birth Limitation Council were to decrease the birth rate, decrease the population growth rate, increase the CPR among married women and to decrease the TFR. To achieve these objectives 4 main activities were planned: organized educational programmes through schools, colleges and the mass media regarding population issues and family planning;	http://www.emro.who.int/emhj-volume-18-2012/issue-3/article-14.html and https://www.jstor.org/stable/pdf/2991948.pdf	Simbar, M. "Achievements of the Iranian family planning programmes 1956–2006," *Eastern Mediterranean Health Journal* 18 no. 3 (2012). Aghajanian, Akbar and Merhyar, Amir H. "Fertility, Contraceptive Use and Family Planning Program Activity in the Islamic Republic of Iran," *International Family Planning*

					increasing access to free contraceptives for married couples”		*Perspectives* 25, no. 2 (Jun., 1999), pp. 98-102.
Iran	1990-1999	Sterilizatio n	Sterilization: 1 to 2 (1=permitted for therapeutic, eugenic, medical, or health reasons only , 2=legal status unclear)	1991	In 1991, Book One, Section Three, Article 59 sub-section 2 legalized all lawful and consensual surgical and medical activities that abide by "technical and scientific guidelines." However, Book Four, Section Two, Article 475 of the same law states that sterilization is illegal.. This corroborates Finlay et al.'s findings that Iran's sterilization policy became unclear between 1990 and 2000.	https://heinonline-org.ezproxy2.williams.edu/HOL/Page?collection=journals&handle=hein.journals/anpop19&id=279&men_tab=srchresults	Boland, Reed. ed. 1992 *Annual Review of Population Law.* Volume 19. *1992 Review of Population Law.*
Iran	1990-1999	Pill and Condom	Pill: --Commercial Advertising: 2 to 3 (2=legal with restrictions, 3=legal without restrictions) Condom: --Commercial Advertising: 2 to 3 (2=legal with restrictions, 3=legal without restrictions)	1993	In 1993, Article 2 subsection C of Law of 23 May 1993 pertaining to population and family planning directed the Ministry of Islamic Culture and Guidance to enable "journalists, film makers and other other artists related in a way to the Ministry" to promote family planning programs.	https://www.refworld.org/docid/4c35e1642.html	Islamic Republic of Iran. “Law of 1993 pertaining to population and family planning.” 1993.
Iran	2000-2009	Abortion	Abortion 0 to 1 for the category “rape or incest” (0=illegal, 1=legal)	2005	Abortion change in 2005 with the Theraputic Abortion Act: “Singular Article- Therapeutic abortion may be carried out upon the conclusive diagnosis by three specialized medical doctors and the verification by the Forensic Examiner of fetal illness that will cause hardship for the mother due to retardation or deformity, or a	https://www.academia.edu/9661337/Therapeutic_Abortion_Act_of_Iran , https://abortion-policies.srhr.org/documents/countries/02-Iran-Thera	Movassagh, Hooman (translator). “Therapeutic Abortion Act of Iran,” *Iranian Yearbook of International and Comparative Law* 4, 2009. “Theraputic Abortion Act 2005.” 2005. Islamic Parliament Research Center.

					life threatening illness of the mother, prior to ensoulment (four months) and with the mother's consent. No punishment or liability shall be attributed to the doctor conducting the abortion"	peutic-Abortion-Act-2005.pdf	
Italy	2000-2009	Pill	Pill Commercial Advertising: 1 to 2 (1=legal via RH education programs, or advertising only to doctors and pharmacies, 2=legal with restrictions)	2009	Source 1 states that, in 2009, the European Commission's member states unanimously approved the "marketing" of a new contraceptive pill, allowing its manufacturer to begin marketing throughout the EU. Additionally, Source 2 states that in 2009 Italy allowed RU-486 (mifepristone) abortion pill.	Source 1: https://www.thepharmaletter.com/article/hra-pharma-s-ellaone-cleared-across-europe Source 2: http://news.bbc.co.uk/2/hi/europe/8178152.stm	"HRA Pharma's ellaOne cleared across Europe." 2009. The Pharma Letter. "Abortion Pill Approved in Italy." 2009. BBC News.
Japan	1990-1999	Pill	Pill Sale Purpose: 1 to 2 (1=non-contraceptive, 2=contraceptive)	1999	The pill was formally recommended as a birth control method by the Central Pharmaceutical Affairs Council in 1999.	https://www.latimes.com/archives/la-xpm-1999-jun-03-mn-43662-story.html	Efron, Sonni. "Japan OKs Birth Control Pill After Decades of Delay." 1999. Los Angeles Times.
Jordan	1990-1999	Sterilization, Condom and Pill	Sterilization: 1 to 2 (1=permitted for therapeutic, eugenic, medical, or health reasons only , 2=legal status unclear) Pill: --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs, or	1996	National Population Policy 1996, "The first National Population Strategy (NPS) was formulated by the National Population Commission and it was approved by the government and launched in 1996. The strategy included four main components: population and sustainable development, gender equality, empowerment of women and population, and advocacy and media." Section I B calls for media campaigns promoting family planning.	https://data2.unhcr.org/en/documents/download/39905 , https://heinonline-org.ezproxy2.williams.edu/HOL/Page?collection=journals&handle=hein.journals/anpop23&id=215&men_tab=srchresults	Kingdom of Jordan. "National Reproductive Health/Family Planning Strategy." 2013. UNHCR. Boland, Reed. ed. 1993 *Annual Review of Population Law.* Volume 23. *1993 Review of Population Law.*

			advertising only to doctors and pharmacies) Condom: --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies)				
Malaysia	1990-1999	Sterilization	Sterilization: legal 3 to 2 (2= legal status unclear, 3= permitted for contraceptive purposes)	1996	The 7th Malaysia Health plan was developed by the The National Population and Family Development Board in 1996, after which sterilization was only allowed "The eligibility criteria for female and male sterilization in government clinics include the following:having two or more children of each sex; having achieved a desired family size; and having a medical contraindication to other types of contraception"	http://reproductiverights.org/sites/crr.civicactions.net/files/documents/Malaysia.pdf	"Women of the World: Laws and Policies Affecting their Reproductive Lives East and Southeast Asia." 2005. New York: Center for Reproductive Rights.
Mali	1990-1999	Sterilization	Sterilization: 1 to 2 (1=permitted for therapeutic, eugenic, medical, or health reasons only , 2=legal status unclear)	1999	Decree No. 99 - 157 / PM-RM of June 16, 1999 Establishing the National Action Committee for the Eradication of Practices Harmful to the Health of Women and Children	http://mail.cnom.sante.gov.ml/index.php?option=com_content&task=view&id=386&Itemid=87	Ministère de la Santé et de l'hygiène publique."Décret 99-157 Comité d'action pour l'éradication des pratiques néfastes." 1999.
Mali	2000-2009	Abortion	Abortion: 0 to 1 for "rape or incest" category (0=illegal, 1=legal)	2002	According to the source, "Voluntary interruption of pregnancy shall in no case be considered as a contraceptive method. Any abortion that consists of the use of means or substances in order to provoke the premature expulsion of a fetus, whatever the moment of pregnancy, when this	https://reproductiverights.org/world-abortion-laws/malis-abortion-provisions#English2	Republic of Mali. "Penal Code, Law No. 01-019 of August 20, 2001, Title III, First Chapter, Section III, Articles 211-213." 2001. Center for Reproductive Rights.

					expulsion is practiced is prohibited for any reason other than: saving the life of the pregnant woman, when the pregnancy is the established consequence of rape or an incestuous relationship, at the express request of the pregnant woman"		
Malta	2000-2009	Sterilization	Sterilization: 1 to 2 (1= permitted for therapeutic, eugenic, medical or health reasons only, 2 = legal status unclear)	2003	See articles 241-243A (this is the modern criminal code but has not ben amended since the change in 2003 for these articles): "Whosoever, by any food, drink, medicine, or by violence, or by any other means whatsoever, shall cause the miscarriage of any woman with child, whether the woman be consenting or not, shall, on conviction, be liable to imprisonment for a term from eighteen months to three years. … Any physician, surgeon, obstetrician, or apothecary, who shall have knowingly prescribed or administered the means whereby the miscarriage is procured, shall, on conviction, be liable to imprisonment for a term from eighteen months to four years, and to perpetual interdiction from the exercise of his profession."	https://www.legislationline.org/download/id/8555/file/Malta_Criminal_Code_amDec2019_en.pdf	Republic of Malta. "Criminal Code." Legislation Online.
Morocco	2000-2009	Sterilization and IUD	IUD: Doctor Installs 2 to 1 (2=doctor or other inserts, 1=doctor only inserts) Sterilization: 2 to 3 (2=legal status unclear, 3= permitted for contraceptive purposes)	2007	According to the document: "A. Indications for IUD The IUD is suitable for women: - during periods of genital activity, wishing to space births; - having at least one child; - wanting a prolonged method of contraception and who does not want tubal ligation; - breastfeeding, - who smokes or who has contraindications to estrogen; - having difficulty using other contraceptive methods; - having a contraindication to pregnancy;	https://abortion-policies.srhr.org/documents/countries/03-Morocco-Family-Planning-Standards-2007.pdf	Royaume du Maroc, Ministere de la Santé. "Les standards des méthodes de planification familiale au Maroc." 2007.

					- accepting the cycle disorders that could induce the IUD, especially at the beginning of its use. Voluntary surgical contraception is a permanent method of contraception that is performed by surgery and under anesthesia. Its purpose is to prevent the meeting of male (sperm) and female (ova) gametes in a woman who no longer wants (for personal reasons) or can no longer (for medical or social) have children. I. CRITERIA FOR INCLUSION (ELIGIBILITY) Tubal ligation can be performed in a woman: - wanting permanent contraception and who have no contraindications to voluntary surgical contraception; - married, aged 30 to 45; - having at least three living children including a boy; - the age of the last child must be over two years old."		
Nepal	2000-2009	Abortion	Abortion: 0 to 1 for the categories “life threatening,” “physical health of the mother,” “mental health of the mother,” “rape or incest,” “fetal impairment,” “economic,” “on request” (0=illegal, 1=legal)	2002	2002 Abortion Legalized: “Abortion is allowed within the first 12 weeks of pregnancy, if the delivery endangers the mother’s life, or if a woman becomes pregnant as a consequence of rape or incestuous sexual relations; then the abortion can take place within 18 weeks of pregnancy (20).”	http://www.fao.org/gender-landrights-database/country-profiles/countries-list/national-legal-framework/en/?country_iso3=NPL	“Nepal: Rights entrenched in the Constitution.” Food and Agriculture Organization of the United Nations.
Norway	2000-2009	Pill	Pill Prescription Requirement: 1 to 2 (1=prescription required,	2002	A 2002 reform of the health care system made all pills free including birth control.	https://www.regjeringen.no/no/dokumenter/stprp-n	Kingdom of Norway. “Regjeringens verdigrunnlag og mål for en helhetlig helsepolitikk.” 2003.

			2=prescription not required)			r-1-2002-2003-/id295608/?ch=1	
Oman	1990-2000	Pill, Condom, and IUD	Pill: --Sale Purpose: missing to 2 (2=contraceptive) --Sale location: missing to 2 (2=shop) --Prescription Requirement: missing to 2 (2=prescription not required) --Subsidy: missing to 2 (2=subsidized) --Commercial Advertisement: missing to 0 (0=illegal) Condom: --Sale Purpose: missing to 2 (2=contraceptive) --Subsidy: missing to 1 (1= commercially available) --Commercial Advertisement: missing to 0 (0=illegal) IUD: --Legal: 0 to 1 (0=illegal, 1=legal) --Doctor Installs: 0 to 1 (0=illegal, 1=doctor only installs)	1994	1994 Birth spacing program: "Because of the high fertility rate, the Ministry of Health initiated a birth spacing programme in 1994. Prior to 1994, women could obtain modern methods of contraception in only a few private clinics in the capital. Since the programme's inception more than eight years ago, efforts have been made to provide contraceptives free to all married couples in primary health care centres which are readily accessible to a majority of the population."	https://www.tandfonline.com/doi/pdf/10.1016/S0968-8080%2804%2923113-5 , http://www.omaninfo.om/topics/106/show/135370	Al Riyami, Asya (Director,), Afifi, Mustafa & Mabry Ruth M. "Women's Autonomy, Education and Employment in Oman and their Influence on Contraceptive Use," *Reproductive Health Matters* 12, no. 23 (2004), pp. 144-154. Ministry of Information, Sultanate of Oman. "The Ministry of Health aims to improve the reproductive behavior of society, with programs proposed in the 'ninth five-year' for health development." 1994.

Papua New Guinea	1990-2000	Pill	Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs or advertising only to doctors and pharmacies)	1993	According to the 1993 Population Policy: "..the project aims to legitimize the practice of family planning through public education to enhance understanding of the benefits of safe motherhood…"	1993 Population Policy http://documents.worldbank.org/curated/en/719991468057565767/pdf/multi0page.pdf	The World Bank. "Staff Appraisal Report: Papua New Guinea Population and Family Planning Project." 1993.
Papua New Guinea	2000-2009	Abortion	Abortion: 1 to missing for "life threatening," "physical health of the mother" (0=illegal, 1=legal)	2009	As of 2009, Abortion was criminalized, even for those whose health might be adversely affected without it (Government of Papua New Guinea (2009a)).	https://www.jica.go.jp/english/our_work/thematic_issues/gender/background/pdf/e10png.pdf	"Country Gender Profile: Papua New Guinea." 2010. Japan International Cooperation Agency.
Papua New Guinea	2000-2009	Abortion	Abortion missing for both "physcial health" and "mental health"	2009	According to Finlay et. al, the change occurred between 2000 and 2009. Due to our inability to find supporting documentation of the precise year the policy was implemented we follow Finlay et al. and the year 2009 was used for the purposes of this paper.		Finlay, Jocelyn, Canning, David, and Po, June. 2012. "Reproductive Health Laws Around the World." PGDA Working Paper No. 96.
Russia	1990-2000	Condom, Pill, and Sterilization	Pill: Subsidy: 1 to 3 (1=commercially available, 3=free) Condom: Subsidy: 1 to 3 (1=commercially available, 3=free) Sterilization: 2 to 3 (2=legal status unclear, 3= permitted for	1993	In 1993, Russia's Constitution was amended. Article 41 stipulates that the government shall provide medical services to all citizens at no cost. Additionally, in 1993, Law No. 5487-1, Section VII, Article 37 legalized sterilization for citizens who are at least 35 years old, who have two or more kids, or "when medically indicated."	https://heinonline-org.ezproxy2.williams.edu/HOL/Page?collection=journals&handle=hein.journals/anpop20&id=222&men_tab=srchresults	Boland, Reed. ed. 1993 *Annual Review of Population Law.* Volume 20. *1993 Review of Population Law.*

			contraceptive purposes)				
Russia	1990-2000	Condom and Pill	Pill: --Subsidy: 1 to 3 (1=commercially available, 3=free) --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs or advertising only to doctors and pharmacies) Condom: --Subsidy: 1 to 3 (1=commercially available, 3=free) --Commercial Advertising: 0 to 1(0=illegal, 1=legal via RH education programs or advertising only to doctors and pharmacies)	1996	In 1996, Decree No. 540 initiated a public health campaign to promote condom use.	https://heinonline-org.ezproxy2.williams.edu/HOL/Page?collection=journals&handle=hein.journals/anpop23&id=640&men_tab=srchresults	Boland, Reed. ed. 1994-1995 *Annual Review of Population Law.* Volume 23-24. *1996-1997 Review of Population Law.*
Saudi Arabia	2000-2009	Pill, Condom, IUD	Missing for all pill, IUD, and condom to: Pill: --Sale purpose: 2 (2=contraceptive) --Sale location: 1 (1=pharmacy)	2001	According to the source: "Saudi Arabia, which had limited access to contraceptive methods from 1976 to 1996, was providing indirect support by 2001." "Government of Saudi Arabia moved from a rather restrictive approach to indirect support for activities conducted by non-governmental organizations"	https://www.scribd.com/document/106802883/Fertility-Contraception-and-Population-Policies	Kingdom of Saudi Arabia. “Fertility, Contraception, and Population Policies” 2003. Population Division: Department of Economic and Social Affairs: United Nations Secretariat.

			Prescription Requirement: 2 (2=prescription not required) --Subsidy: 1 (1=commercially available) --Commercial Advertising: 0 (0=illegal) Condom: --Sale purpose: 2 (2=contraceptive) --Subsidy: 1 (1=commercially available) --Commercial Advertising: 0 (0=illegal) IUD: --Legal: 1 (1=legal) --Doctor Installs: 2 (2=doctor or other inserts)				
South Africa	1990-2000	Abortion, IUD, Pill, Condom	Abortion: 0 to 1 for the categories “economic” and “on request” (0=illegal, 1=legal)	1996	In 1996, Constitution Act No. 108 established reproductive health services as a right. In the same year, Act No. 92 (Choice of Termination of Pregnancy Act) further stipulates that "the State has a responsibility to provide reproductive health to all persons."	https://heinonline-org.ezproxy2.williams.edu/HOL/Page?collection=journals&handle=hein.journals/anpop23&id=34&men_tab=srchresults	Boland, Reed. ed. *1996-1997 Annual Review of Population Law.* Volume 23-24. *1996-1997 Review of Population Law.*

South Korea	1990-2000	Pill, Condom	Pill: --Subsidy 3 to 2 (2=subsidized, 3=free) Condom: --Subsidy 2 to 3 (2=subsidized, 3=free)	1996	According to the source, "demographic changes and other new concerns led the government to abolish the population control policy, and to adopt a new population policy in 1996 which emphasizes population quality and welfare."	(https://iussp.org/sites/default/files/event_call_for_papers/Extended_paper_Nam-Hoon_CHO.pdf)	Cho, Nam-Hoon. "Achievements and Challenges of the Population Policy in Korea." Hanyang University.
Sudan	1990-2000	Abortion	Abortion: 0 to 1 for "mental health of the mother" (0=illegal, 1=legal)	1991	1991 criminal code prohibited abortion except to save the mother's life or if the pregancy was a result of rape and the abortion occured fewer than 91 days after conception. In particular, the relevant section is Article 135 of the Penal Code.	https://www.jstor.org/stable/pdf/3381514.pdf?refreqid=excelsior%3Addaf0baead42c9f4e15c095c7a37f379 , https://heinonline-org.ezproxy2.williams.edu/HOL/Page?collection=journals&handle=hein.journals/anpop18&id=87&men_tab=srchresults	"Sudan: The Criminal Act 1991," *Arab Law Quarterly* 9, no. 1 (1994), pp. 32-80. Boland, Reed. ed. *1991 Annual Review of Population Law.* Volume 18. *1991 Review of Population Law.*
Switzerland	1990-2000	Condom and Pill	Pill: --Prescription Requirement 0 to 1 (0=illegal, 1=prescription required) Condom: --Commercial Advertising 3 to 4 (3=legal with restrictions, 4=legal without restrictions)	1991	In 1991, the Swiss government repealed Article 211 of the Penal Code, which had made it illegal to promote or display "public objects [intended to] prevent pregnancy."	https://heinonline-org.ezproxy2.williams.edu/HOL/Page?collection=journals&handle=hein.journals/anpop18&id=497&men_tab=srchresults	Boland, Reed. ed. *1991 Annual Review of Population Law.* Volume 18. *1991 Review of Population Law.*

Switzerland	2000-2009	Abortion	Abortion: 0 to 1 for the categories “on request,” “economic,” “fetal impairment,” “rape or incest” (0=illegal, 1=legal)	2001	Abortion law passed in March 2001 and implemented from 2002: Changed from abortion legal with restrictions to abortion legal with no restriction until the 12th week of pregnancy.	https://www.planetesante.ch/Magazine/Grossesse/Interruption-de-grossesse-IVG/Interruption-volontaire-de-grossesse-la-loi-suisse-respecte-la-liberte-de-decision-de-la-femme , https://www.admin.ch/opc/fr/official-compilation/2002/2989.pdf	Weigand, Ellen “Interruption Voluntaire De Grossesse: La Loi Suisse Respecte La Liberté De Décision De La Femme,” 2012. Planète Santé. L’Assemblée fédérale de la Confédération suiss. “Code pénal suisse (Interruption de grossesse): Modification du 23 mars 2001.” 2001.
Syrian Arab Republic	2000-2009	Sterilization	Sterilization: 1 to 2 (1=permitted for therapeutic, eugenic, medical, or health reasons only, 2=legal status unclear)	2001	According to the source, there was a “National Population Strategy and the Ministry of Health’s strategy for the period 2001-2020" Additionally, looking back at Engender health in the sterilization chapter it says that a sterilization change happened in Syria (among other countries) in the time frame of 1985-2001.	https://www.refworld.org/docid/47387b70c.html	“Women's Rights in the Middle East and North Africa - Syria.” 2005. Refworld. *Contraceptive Sterilization: Global Issues and Trends.* 2002. New York City: EngenderHealth.
Tanzania	1990-2000	Sterilization	Sterilization: 3 to 2 (3=permitted for contraceptive purposes, 2=legal status unclear)	1994	According to Engender Health, Tanzania allowed sterilization as contraception starting in 1994 with the 1994 Population Policy.	https://www.engenderhealth.org/files/pubs/family-planning/factbook_chapter_4.pdf (Page 89)	*Contraceptive Sterilization: Global Issues and Trends.* 2002. New York City: EngenderHealth.
Tunisia	2000-2009	Condom and Pill	Pill: Subsidy 1 to 2 (1=commercially available, 2=subsidized) Condom: Subsidy 1 to 2 (1=commercially	2001	"In 2001, Tunisia became the first country in the Arab world to register a dedicated emergency contraceptive pill (ECP)" (Source 1). "Since 2001, as part of the National Program to Combat Sexually Transmitted Diseases (STDs) and HIV/AIDS, free access to antiretroviral	(https://www.ibisreproductivehealth.org/projects/ec-tunisia) https://www.ncbi.nlm.nih.gov/pm	Foster, Angel.“Emergency contraception in Tunisia: A multi-methods assessment of availability, accessibility, and acceptability.” Ibis Reproductive Health.

			available, 2=subsidized)		drugs has been guaranteed, along with free, voluntary, and confidential HIV tests. The prevention and treatment of sexually transmitted infections has also been included in primary health care services" (Source 2).	c/articles/PMC5395000/)	
Uganda	1990-2000	Condom, Pill, and IUD	Condom: --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies) --Subsidy: 2 to 3 (2=subsidized, 3=free) Pill: --Commercial Advertising: 0 to 1 (0=illegal, 1=legal via RH education programs, or advertising only to doctors and pharmacies) --Subsidy: 2 to 3 (2=subsidized, 3=free) IUD: --Legal: 0 to 1 (0=illegal, 1=legal) --Doctor inserts: 0 to 2 (0=illegal, 2=legal status unclear)	1993	Section 8 of Part I states that in Uganda, family planning includes contraceptive pills, condoms, and IUDs. Section 6 (2) of Part I establishes family planning advertising campaigns. Section 5 (1) of Part I states that all sexually active men and women are eligible to receive family planning services, implying, among other things, that IUDs are legal. Section 1 (1) of Part I states that family planning services shall be provided to all eligible persons, thereby implying that family planning services are free. Section 11 requires that anybody administering family planning services, and thus inserting IUDs, must be trained.	https://heinonline.org/HOL/Page?collection=journals&handle=hein.journals/anpop20&id=243&men_tab=srchresults , https://www.engenderhealth.org/files/pubs/family-planning/factbook_chapter_4.pdf (Page 89)	Boland, Reed. ed. *1993-1994 Annual Review of Population Law.* Volume 20-21. *1993-1994 Review of Population Law.* *Contraceptive Sterilization: Global Issues and Trends.* 2002. New York City: EngenderHealth.

Vietnam	2000-2009	Sterilization	Sterilization: 3 to missing (3=permitted for contraceptive purposes)	2003	In 2003, Article 23 (2) of the Population Ordinance mandated that the State invest in "reproduction-supporting" technologies and services that assist sterilized individuals.	http://vbpl.vn/tw/Pages/vbpqen-toanvan.aspx?ItemID=9032	Socialist Republic of Vietnam Legal Ordinance Documents. "Population Ordinance (No. 06/2003/PL-UBTVQH11)." 2003.
Yemen	1990-2000	Sterilization	Sterilization 1 to 2 (1=permitted for therapeutic, eugenic, medical or health reasons only, 2=legal status unclear)	1998	The first and second five-year development plans (1996-2000 and 2001- 2006) identify the increase in the social acceptance and uti- lization of family planning programs and women's access to reproductive health services as strategic goals. Finlay's data set suggests that sterilization was illegal in 1990 and a world bank report from August of 1997 says that, as of its publishing, vasectomies were legal to protect the health of the client.	https://yemen-nic.info/db/laws_ye/detail.php?ID=11500 http://documents.worldbank.org/curated/en/663331468764088416/text/multi0page.txt	Republic of Yemen."Law No. (37) for the year 1996 AD approving the first five-year plan for the years 1996-2000." 1996. Republic of Yemen. "Enhancing Policy Options A Population Sector Study." 1997. Human Development Group: Middle East and North Africa Region.

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