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Longitudinal Determinants of Married Women's Autonomy in Egypt

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Abstract

This article explores determinants of women's autonomy in Egypt around the beginning of the 'Arab Spring' in 2011. We show that women's autonomy over time is a product not only of their individual characteristics, but also of the household and community environment in which they live. Using the 2006 and 2012 Egyptian Labor Market Panel Survey (ELMPS) and multilevel models, results demonstrate that women's autonomy changes over time. There are large and consistent variations in women's autonomy by household region of residence and wealth. For example, women in the rural and urban Upper Egypt region are less autonomous than women in the Cairo region, and women in wealthier households are less autonomous compared to the poorest households. Programs aiming to increase women's autonomy focus exclusively or primarily on women's own characteristics. These results indicate that strategies to improve women's autonomy should be mindful of the multiple dimensions of autonomy and have a programmatic focus on changing household and social environments.

Keywords

Autonomy; community variation; decision-making; empowerment; gender roles; Middle East and North Africa; multilevel models

Notes on Contributors

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Anne Pebley is the Bixby Professor of Population Studies in the School of Public Health and the Department of Sociology at UCLA and was previously the director of the California Center for Population Research. For the past decade, she has also served as a trustee for the Population Council. Her research has focused on fertility and marriage patterns, children's health and welfare, migration, neighborhoods, and family organization in the US and internationally. She has collaborated with researchers and institutions in Mexico, Central America, Bangladesh, India, and West, Central and East Africa. She is principal investigator of the Los Angeles Family and Neighborhood Survey, a longitudinal study of the effects of neighborhoods on children in Los Angeles County. Professor Pebley has made major contributions to the field of demography through her research, leadership, training of the next generation of demographers, and broad commitment to the demographic research profession.

Introduction

Women's autonomy is an important determinant of women's health and well-being and, therefore, a focus of global development efforts (Ewerling et al. 2017). Autonomy is also associated with lower fertility, greater contraceptive use, lower ideal family size, and better maternal and child health (Pratley 2016; Upadhyay, Gipson, et al. 2014). The large literature on women's autonomy, health, and fertility shows that the two can be positively or negatively related, depending on the setting, the measure used, and the level of measurement (e.g., individual vs. community) (Upadhyay, Gipson, et al. 2014). These inconsistent findings point to the need to improve our understanding of how to measure women's autonomy and how autonomy is related to other aspects of women's family and community lives.

Few empirical studies simultaneously examine multiple aspects of women's lives associated with autonomy (Anderson and Eswaran 2009; Kantor 2003; Rahman and Rao 2004; Rammohan and Johar 2009; Akram 2017). More often, studies are focused on the effects of a single aspect of women's lives on autonomy at one point in time. Programs relying on individual-level factors, e.g., greater access to financial resources – have generally had limited success in promoting autonomy (Kantor 2003). There is an increasing awareness in the development and public policy communities that substantial progress in improving women's autonomy requires changing not only women's own skills and access to work and financial resources (e.g., through education, work programs, and microfinance), but changes in the social environments in which women live (Yount et al. 2015; Assaad, Nazier, and Ramadan 2015; Akram 2017). Gender relations are highly influenced by community norms and values (Mason and Smith 2003; Mason and Smith 2000). Developing approaches to making social environmental changes, however, requires new research regarding which aspects of women's household environments affect autonomy and through what mechanisms. To date, few studies examine women's autonomy over time and consider whether household and community environments affect autonomy, particularly in Middle Eastern and North African countries. This study uses the 2006 and 2012 Egyptian Labor Market Panel Survey to examine the longitudinal effects of individual, household, and community characteristics on women's autonomy within the context of their households and the regions where they live in Egypt.

Background

Women's Status and Autonomy

This article focuses on women's autonomy, i.e., women's ability to participate in and make decisions, to formulate their own strategic choices, and to control resources, their bodies, and movement (Dyson and Moore 1983; Agarwala and Lynch 2006; Rammohan and Johar 2009; Jejeebhoy and Sathar 2001). Empowerment is also used in the literature to capture the same concept. However, empowerment implies that it is the end result of a process of gaining power (Kabeer 1999), while autonomy measures a woman's current situation and whether it is a change from a previous status or not (Agarwala and Lynch 2006; Mumtaz and Salway 2009). We use the term 'women's autonomy' rather than the more diffuse term 'women's status' which is the focus of much previous research. Women's status and related

concepts have often been defined by women's socioeconomic characteristics, e.g., educational attainment or employment (Abadian 1996; Dyson and Moore 1983). At best, measures like education and employment are distal and imprecise proxies for women's autonomy, since they are not directly related to decision-making, control, or agency. At worst, they prevent researchers from assessing whether improving girls' and women's education and employment opportunities – often major elements of programs for girls and women – do, in fact, change the amount of say they have in their own lives (Balk 1994; Govindasamy and Malhotra 1996).

Previous studies use several strategies to measure women's autonomy. The first, household decision-making, has been used for many years, particularly in survey-based research (Dyson and Moore 1983). Typically, female respondents are asked a set of questions about who in their household makes decisions about a series of issues. These measures provide useful insights on household decision-making and offer insights into women's personal autonomy (Rammohan and Johar 2009; Jejeebhoy and Sathar 2001). A second measure, spatial mobility, arose in studies from South Asia where social norms associated with *pardah* typically prevent women from leaving their homes (Mumtaz and Salway 2009). However, even in these societies, mobility or physical autonomy can have different meanings because marginalized women (e.g., the very poor, widows) have to leave home to earn a living, whereas middle class women have the option to stay home, but may have more autonomy in other ways. So greater mobility may indicate either greater physical autonomy or a more marginal status, depending on social class. Both decision-making and mobility are important dimensions of women's agency scales in Egypt (Yount et al. 2015), and the structure of these agency scales are invariant across time (Cheong, Yount, and Crandall 2017). A third measure is financial control over personal assets or economic autonomy (Anderson and Eswaran 2009). Women who own personal financial resources and/or a greater say in household finances are often more autonomous in other areas of life (Sabarwal, Santhya, and Jejeebhoy 2014). For example, decision-making, mobility, and control in budgetary decisions are important determinants of contraceptive use in Egypt (Govindasamy and Malhotra 1996; Samari 2017b). This study uses longitudinal data from a recent national probability sample in Egypt, which contains measures of several dimensions of women's autonomy or personal, physical, and economic autonomy.

Individual Determinants of Women's Autonomy

Women's autonomy is likely to be affected by individual, family, community, and macro political and social factors (Agarwala and Lynch 2006). The great majority of research in this area has been conducted in South Asia, rather than Egypt or other Middle Eastern or North African countries (Upadhyay, Gipson, et al. 2014). Research from South Asia suggests that marital status, consanguinity between spouses, a woman's age at marriage, and age differences with husbands are important determinants of autonomy (Rahman and Rao 2004; Kantor 2003). Although most previous research is limited to currently or ever married women (Upadhyay, Gipson, et al. 2014), studies comparing women of all marital statuses show that married women generally have more control over personal assets and income (Kantor 2003) than single women. How much control depends, in part, on the degree of consanguinity between the spouses – women married to close relatives are likely to have

greater control (Rahman and Rao 2004). Women's age at marriage can be especially important – women who marry at a young age generally have fewer personal financial resources than their older counterparts, tend to be more dependent on their husbands, and have a lower social standing in the household (Abadian 1996).

Later age at marriage provides more opportunity for education, employment, and participation in the choice of a husband, which can enhance women's power within the households, her ability to negotiate with husbands and other household members and her involvement decision making after marriage (Crandall et al. 2016). However, age at marriage should not be a proxy for women's post-marital agency in Egypt (Crandall et al. 2016). The age gap between spouses could also have effects on women's autonomy. A smaller age gap between husbands and wives may increase the frequency of spousal communication and increase women's participation in reproductive decisions (Hogan, Berhanu, and Hailemariam 1999). Over time, women's autonomy may increase with age and childbearing – younger women are often relatively powerless, but older women have greater freedom of movement and control over household decisions (Rahman and Rao 2004; Acharya et al. 2010).

Women's education and employment have been shown to be very important—often the most important—determinants of autonomy (Anderson and Eswaran 2009). Higher educational attainment and premarital employment may give women a greater sense of personal control, improved communication skills, and, in the case of employment, independent assets (Murphy-Graham 2010). However, more education does not guarantee that a woman will have more autonomy in all domains or more control of household resources after marriage (Haghighat 2013). For example, Hussain and Smith (1999) found that more educated women make more decisions, but the same (or less) control over physical mobility than women with less education.

The education of other family members may also be important, both in absolute and relative terms. Rahman and Rao (2004) found that a woman's education and her husband's education all have independent effects on women's autonomy, freedom of movement and household decision-making. However, the effects of husband's education appear to be complex. Husbands with higher educational attainment may have more egalitarian relationship spouses compared with poorly educated men. However, higher educational attainment for men married to less educated women may reinforce men's role as the dominant partner.

Women's pre- and post-marital employment may also increase autonomy for two reasons. First, if women work outside their homes, they are likely to be exposed to a wider range of ideas and social roles which may change their views about what they should be able to do (Drolet 2010). Second, employment may provide women with access to and at least partial control over their own money. Evidence of women's access to their own money on autonomy comes from research on women-oriented micro-credit programs. Women who have an independent income or some savings appear to have greater freedom of movement and decision-making authority in their households (Acharya et al. 2010). Conversely, women without independent funds are less powerful in negotiating their own status (and often that

of their children) with family (Anderson and Eswaran 2009). Without resources, they may also find it impossible to leave difficult marriages. However, other evidence suggests that increasing women's access to financial assets may create conflict with husbands, reduce women's autonomy, and lead to interpersonal violence (Yount, Zureick-Brown, and Salem 2014).

Household and Community Determinants of Women's Autonomy

Most previous research has focused on the effects of women's individual characteristics on their own autonomy, with a few key exceptions (Mason and Smith 2000; Jejeebhoy and Sathar 2001; Balk 1994; Mason and Smith 2003; Akram 2017; Assaad, Nazier, and Ramadan 2015). However, assessment of the effects of family, community, regional, and macro sociopolitical environments on women's autonomy is essential because they are likely to have a crucial effect on constraining or facilitating women's autonomy (Desai and Temsah 2014). For most women, families and households are the most important setting in which women do (or do not) exercise autonomy (Malhotra, Vanneman, and Kishor 1995). For women with low autonomy, their husbands and in-laws may control access to children, food, money, and health services and ultimate decision-making control (Moss 2002). Women's autonomy within their household is determined by their status in the household hierarchy and their ability to negotiate their roles, authority, and participation in decision making with their husbands and other household members.

The research on household determinants of women's autonomy suggests that two characteristics – household structure and wealth – are important predictors. Balk (1994) finds that in a highly patriarchal society like Bangladesh, extended family households are associated with less autonomy for women. Rammohan and Johar (2009) find that women in larger households – many of which include extended family – have less autonomy than those in smaller households. The relationship between autonomy and household wealth is complex. Although women in wealthier households may have access to more resources and may exercise more autonomy in some areas (e.g., decision-making about expenditures) (Rammohan and Johar 2009), they are often more socially isolated and have lower physical mobility (Rahman and Rao 2004) because their families have the financial means to afford the tradition of female seclusion.

Wider social norms about women's capabilities and place in society can also have a large effect on attitudes and expectations of families about what social roles and behavior are appropriate for women (Desai and Temsah 2014). These norms can also affect the success or failure of programs designed to increase women's autonomy (Mensch et al. 2003). Communities enforce normative behavior through socialization, criticism/approval, shame and shunning, and giving or withholding social support for women themselves and their families. One important community characteristic is whether the family lives in an urban or rural area. In urban areas, it is more acceptable for women to be seen in public and to hold a job. Thus, women are more likely to have access to their own money and to be able to make autonomous decisions about its use. However, urban and rural differences in autonomy may be related to differences in the composition of these places. For example, urban women are

more likely than those in rural areas to have formal education – a factor which itself is linked to greater autonomous decision-making (Heaton, Huntsman, and Flake 2005).

The effects of women's own characteristics may also be affected by the community social environment surrounding them. While few studies consider community level effects, it is recognized that individual measures of women's autonomy cannot be used without accounting for household and community level differences (Ghuman, Lee, and Smith 2006; Mason and Smith 2000). For example, Dharmalingam and Morgan (1996) suggest that women's employment leads to greater autonomy only in communities in which most women hold jobs. In the case of household wealth, Senarath and Gunawardena (2009) find that the differences in autonomy by household wealth is greater in rural than urban regions.

Cultural practices and social norms, including religious norms, are also important at a larger geographic level (Jejeebhoy and Sathar 2001; Rammohan and Johar 2009; Desai and Temsah 2014). For example, in India and Pakistan, Jejeebhoy and Sathar (2001) use a region variable to differentiate the more conservative north from the more egalitarian south and show higher levels of autonomy among women in south India. In neighboring Nepal, women's autonomy also varies considerably by region depending on dominant norms and social structure (Acharya et al., 2010). This study extends previous research by using data from a longitudinal national probability survey in Egypt, which contains direct measures of multiple dimensions of women's autonomy. This study also accounts for household characteristics and the role of community variation on women's autonomy, and longitudinal data to examine women's autonomy over time.

Egypt

We examine women's autonomy in Egypt – a country with many commonalities but also many differences from South Asian countries where most research on women's autonomy has focused. Researchers have called for studies which further contextualize women's autonomy in different settings (Heckert and Fabric 2013; Ewerling et al. 2017) particularly in the Middle East and North Africa (Haghighat 2013). Egypt is the largest and most densely settled country in the Arab world. It is patriarchal, and traditionally male-dominated and women face inequalities across policy and community sectors as well as in the household. Families are organized along patriarchal lines as married men are typically heads of households and make decisions for all household members. However, young adults in Egypt say that women and men should share household decisions (Mensch et al. 2003). Education is an important determinant of women's status in Egypt, but higher education is not always associated with changes in gender attitudes (Mensch et al. 2003).

Egyptian women generally perform traditional roles in the household and are rarely in the labor force (El-Zanaty and Way, 2009). Sons live with parents until they have enough resources for marriage and daughters until they are married. Marriages are typically arranged by parents, with the interests not only of the young adult but also the family at large in mind (Crandall et al. 2016). Norms for women including premarital virginity and marital fertility are matters of family honor (Rashad, Osman, and Roudi-Fahimi 2005).

After marriage, women's responsibilities and obligations are transferred from her natal family to her husband's family. In Egypt, dowries are a means of maintaining social status by allowing women's families to attract husbands of at least equal social standing. Dowries can increase the economic resources of the marital household and the wife's participation in the expenditures and other household decisions (Srinivasan and Bedi 2007). Endogamy is common: women are often married to cousins. Close premarital family ties between natal and marital families may increase women's autonomy within her marital family. Several factors likely affect married women's autonomy in Egypt: the marriage process (e.g., age at marriage, dowry) itself, a woman's social background, educational attainment, work experience, characteristics of the husband, and household characteristics and location.

This study focuses on testing the effects of women's individual and household characteristics on women's autonomy over time, and whether households and communities affect women's autonomy beyond variation observed from individual characteristics. Hypotheses include that characteristics of the household, like household wealth and spouse's education, will have an important effect on women's autonomy beyond that of individual characteristics. Given the established large differences in economic development and social conservatism in Egypt, expected findings also include significant community and regional differences in autonomy even when accounting for women's past autonomy and other individual and household characteristics.

Methods

Data

The Egyptian Labor Market Panel Survey (ELMPS) is a nationally representative panel survey of households in Egypt undertaken by the Central Agency for Public Mobilization and Statistics, CAPMAS, and the Economic Research Forum. Data from the 2006 and 2012 ELMPS is well suited for this research because it was designed to study socioeconomic attributes of households and includes a large nationally representative sample of women. The data contains individual-level demographic information as well as household-level information about assets and consumption. The ELMPS measures of autonomy include: (a) a set of questions on participation in household decision-making, (b) questions about a woman's ability to move around on her own (mobility), and (c) access to financial resources.

All data were self-reported during a face-to-face interview conducted by a trained field interviewer (Assaad and Krafft 2013). The analytic sample is restricted to women in their childbearing years who are currently married, since relatively few women of these ages are not married. Of the 37,140 individuals in 2006, 49% or 18,555 are women, 9,937 are between the ages of 15 and 49, and 6,296 are married. Of these married women, 4,655 women were married with complete data on their spouses and participated in both the 2006 and 2012 ELMPS. Between 2006 and 2012, 1,181 women were lost to follow up, and compared to the analytic sample and consistent with an analysis of attrition, these women are slightly younger, higher educated women from the greater Cairo area. The 4,655 married women, ages 15 to 49, with data on spouses comprise the analytic sample.

Community definition

The term ‘community’ describes local geographical areas. Communities are operationalized as the ELMPS primary sampling unit (PSU). All villages in rural areas or urban quarters (shiyakhas) in cities were divided into PSUs of 1500 housing units in each, and then, one or more PSUs are selected from each village or shiyakha. Egypt is administratively divided into 26 governorates grouped together as the Urban Governorates (Cairo, Alexandria, Port Said, Suez), Rural Governorates, and the governorates of Upper and Lower Egypt. Lower Egypt lies in the north and consists of the Nile delta, while Upper Egypt is the region south of the Nile Delta. Each of the 26 governorates is allocated a number of PSUs that is proportionate to its size and its urban/rural distribution (Assaad and Krafft 2013). There were 417 PSUs with an average of 11 observations per cluster.

Measures

Outcome: autonomy

Three measures operationalize autonomy: household decision-making for personal autonomy, mobility for physical autonomy, and financial or economic autonomy as reported by female respondents (see Table 1). For *household decision-making*, respondents were asked who in the family had final say on a series of decisions like buying clothing or making food for the day ($\alpha = .74$). Response categories include the respondent alone, husband, respondent and husband jointly, in-laws, respondent, husband, and in-laws or others. Since these response categories do not create an interval, a *household decision-making* count variable includes the total number of times the respondent herself makes decisions and the number of times the respondent and husband make household decisions. Ranging from 0 to 10, this captures all possible ways the respondent has a say in household decisions with a higher count indicating more participation on a greater number of household decisions.

For *mobility*, respondents were asked whether they could go to a local market, health center or home of relatives or friends in the neighborhood, and if they could take children to a health center. Responses were reverse coded and included ‘4=without permission’, ‘3=just inform them’, ‘2=need permission’, and ‘1=cannot go alone’. Items were averaged to creating a scale from 1 to 4 with higher responses indicating a higher amount of personal control in mobility decisions ($\alpha = .79$).

Financial autonomy is a dichotomous variable based on two items. Respondents were asked ‘do you have direct access to household money in your hand to use’ and ‘do you personally have savings, own land, house, jewelry, or other valuables which you can sell or use as you please’. Those who responded ‘yes’ to one or both items are defined as having access to financial resources while those who responded ‘no’ on both do not.

Individual determinants

Individual-level variables that have been identified in the literature as potential determinants of women’s autonomy are included: marriage process variables and women’s social background variables. For the marriage process, age at marriage, current age, value of dowry, and relationship to husband are included. Age at marriage is dichotomized to indicate

marriage before age of 18 or at 18 years or older. The value of the dowry is a categorical measure indicating whether the respondent had no dowry or some dowry. A category also represents the non-response because a third of women did not give an answer. A woman's relationship to her husband is a categorical variable that captures whether the respondent is related to her husband or not. Variables on women's social background include education and having ever worked. Education is measured in years completed. Having ever worked is a dichotomous variable indicating whether or not a woman has ever worked for pay.

Household determinants

Household-level variables include urban and rural region of residence, household wealth, and characteristics of spouses including age and education. Region is coded '0=greater Cairo', '1=Alexandria and Suez', '2=Urban Lower Egypt', '3=Rural Lower Egypt', '4=Urban Upper Egypt', and '5=Rural Upper Egypt'. Household wealth is estimated from asset variables using principal components analysis. Ownership of consumer items as well as characteristics of the dwelling such as flooring and roofing and access to water and sanitation are used as measures of poverty. Household wealth scores are divided into quintiles: poorest, poor, middle, rich, and richest. Spouses' age and education are measured in years.

Analytic Strategy

Univariate analyses were conducted for all variables. Bivariate associations between all variables were estimated and revealed no concerns for collinearity among the covariates. For the multivariate analysis, two models are estimated for each of the three autonomy outcomes: *household decision-making*, *mobility*, and *financial autonomy*. First, multilevel models with individual characteristics test the associations between the individual determinants and autonomy, and then Model 2 adds the household determinants to produce the full models. All models of autonomy in 2012 also account for autonomy in 2006. These multilevel models estimate autonomy, control for the correlation among women resulting from clustering within PSU, and enable tests for differences in the community effects for women with different socio-economic characteristics. In each model, the first level is the individual and the second level is the primary sampling unit (as a proxy for community). Multilevel mixed effect negative binomial regression models are used for *decision-making*. Due to over-dispersion in decision-making, tests of model fit favored negative binomial regression models, which allow for the variance to be greater than the mean. Multilevel ordinary least square models are used for *mobility*, and logistic mixed effect multilevel models are used for *financial autonomy*. All models were estimated in STATA 14.

Results

Table 1 shows the distributions of the independent and dependent measures for the ELMPs sample of married women ages 15 to 49 years. Women are in their early 30s and were married around age 20. About a third of women who answered the question reported they had a dowry and about one third reporting on their relationship with their husband were related. About half the respondents completed over seven years of schooling or a secondary or technical secondary education. Two-thirds of the women never worked for pay.

As for household characteristics, a third of households are in rural Lower Egypt and 10% of households are in Greater Cairo or Alexandria and the Suez Canal. The women's spouses are in their late 30s and have an average of a 7-year age difference with wives. Approximately half of the women's husbands have a secondary or higher education.

In general, respondents have some autonomy in household decisions, with the average score for respondents participating in around 6 household decisions out of a total of 10. Compared to 2006, respondents make slightly fewer household decisions in 2012 (Mean=5.58; $p<0.001$). In both 2006 and 2012, respondents have limited personal control in mobility, with the average score equivalent to a response between 'need permission' and 'just inform them', indicating that most women need permission to go outside of the home. However, there is still variation with scores ranging from 0 to 4, and women have significantly more mobility in 2012 ($p<0.001$). Access to financial resources also significantly changes over the six year period with 65% of women being financial autonomous in 2006 compared to 60% of married women in 2012.

Tables 2 shows results of bivariate models of individual and household determinants on married women's autonomy in 2012. For the negative binomial models of *decision-making*, incident rate ratios are presented and can be interpreted as a percent change in the incident rate, and for the logit models of *financial autonomy*, odds ratios are presented. Bivariate associations demonstrate that all selected individual and household characteristics are associated with at least one measure of women's autonomy. For example, women who are older than 18 at first marriage are likely to make more household decisions (IRR=1.20, $p<0.001$), have greater mobility ($\beta=0.08$, $p<0.01$), and have more financial autonomy (OR=1.32, $p<0.001$). Household measures like region and household wealth demonstrate bivariate associations with all autonomy measures.

Tables 3 and 4 show the multilevel models of individual and household determinants of married women's autonomy in 2012. For all outcomes, the likelihood-ratio test comparing the multilevel models with a standard regression model confirms that a multilevel model is preferred. Likelihood-ratio tests, estimated values of the level two variance, and the intraclass correlations coefficients (ICC) are reported below the coefficients. ICC's range between .07 and .11 suggesting that community membership explains between 7% and 11% of the variation in women's autonomy.

Table 3 includes results for decision-making and mobility. Women's autonomy in 2006 is an important predictor of later autonomy in 2012. For example, women who make more household decisions in 2006 also make more household decisions in 2012 (IRR=1.04, $p<0.001$). For the individual characteristics, the results for individual decision-making and mobility are somewhat similar. For example, for each year increase in age, women make fewer decisions (IRR=0.95, $p<0.001$) and have less mobility ($\beta=-0.01$, $p<0.001$). Older age at marriage is associated with more household decision-making, but not mobility, all else held constant (IRR=1.08, $p<0.05$). Education is of particular importance for decision-making with more educated women making more household decisions (IRR=1.02, $p<0.001$). On the other hand, women's employment is of particular importance for mobility: on

average, those who have worked have greater mobility than those who have not been employed ($\beta=0.09$, $p<0.01$).

Several household determinants are significantly associated with both decision-making and mobility (Table 3, Model 2). For both decision-making (LR $\chi^2=34.21$, $p<0.001$) and mobility (LR $\chi^2=56.21$, $p<0.001$), likelihood ratio tests show that model 2, which considers household characteristics is preferred over model 1 of only individual characteristics. Region is related most consistently to women's autonomy. It shows that women in rural Upper Egypt consistently have less autonomy compared to women in Greater Cairo. As expected, women in rural Upper Egypt have significantly lower mobility, and on average, participate in fewer household decisions compared to women in Greater Cairo (IRR=0.81, $p<0.001$). Women in urban Upper Egypt also make fewer household decisions (IRR=0.90, $p<0.05$) and have less mobility as compared to women in Cairo ($\beta=-0.21$, $p<0.001$). Household wealth is also significantly associated as women in the higher income households are less likely to make decisions and have mobility compared to women in the poorest households.

Unlike decision-making and mobility, age is not an important predictor of women's financial autonomy (Table 4). However, women's financial autonomy in 2006 and autonomy in other dimensions like decision-making and mobility in 2006 are significantly associated with women's later financial autonomy in 2012. Similar to women's involvement in decision-making, when household and community characteristics are accounted for, higher education is associated with financial autonomy in 2012 (aOR=1.03, $p<0.01$). Similar to mobility, having ever worked for pay is associated with financial autonomy in 2012 (aOR=1.58, $p<0.001$). Characteristics of marriages like age and dowry are largely not associated with women's financial autonomy.

Model 2 of financial autonomy including the household characteristics is preferred over Model 1 of the individual characteristics (LR $\chi^2=58.14$, $p<0.01$). Household region of residence demonstrates a similar relationship for financial autonomy as for household decision-making and mobility. Women in rural (aOR=0.34) and urban (aOR=0.29) Upper Egypt have lower odds of financial autonomy in 2012 compared to women in greater Cairo ($p<0.001$). Women in rural Lower Egypt also have lower odds of being financial autonomous compared to women in the Greater Cairo (aOR=0.50, $p<0.001$). In 2012, there are no observed differences for the poorer households compared to the poorest households. However, women in the richest households have less access to their own financial resources (aOR=0.70, $p<0.05$). Spousal characteristics are not associated with women's financial autonomy.

Discussion

This study examines the determinants of women's autonomy over time and what individual, household, and community characteristics are associated with autonomy for reproductive age married women in Egypt. Prior studies, conducted primarily in South Asia, have only looked at the influence of one individual level determinant at a time, suggesting there is a greater need to contextualize measures of autonomy in other settings (Heckert and Fabic

2013; Upadhyay, Gipson, et al. 2014), and implying that households and communities are likely to affect women's autonomy beyond that of individual characteristics (Mason and Smith 2003). This study uses longitudinal data to examine multilevel determinants of several dimensions of autonomy to contextualize women's autonomy for households in contemporary Egypt.

With respect to the first aim of the study, several individual and household factors contribute to women's autonomy longitudinally. Contrary to expectation and findings from South Asian contexts (Rahman and Rao 2004; Acharya et al. 2010), younger women have a greater say in household decisions and more control over their mobility or physical autonomy. Additionally, characteristics of women's marriages are generally not associated with their autonomy over time. Older age at marriage is associated with decision-making, but not mobility or financial autonomy. This finding aligns with previous work on age at marriage in Egypt (Crandall et al. 2016) and shows that over time age at marriage also is a weak predictor of post-marital autonomy. Other marital characteristics like dowries and endogamy were not associated with women's autonomy. The lack of significance of dowries is in contrast to research from India that shows dowries allow women to practice more control within the marital household (Srinivasan and Bedi 2007). In addition to marital characteristics, this study also shows that characteristics of spouses like age and education were not associated with women's autonomy over time. These findings suggest that marital and spousal proxies that are often used to measure agency, empowerment, and autonomy should not be used for women's autonomy in Egypt.

Education and employment are associated with women's autonomy in Egypt, but their association depends on the dimension of autonomy being measured. As observed in other studies, employed women have greater economic or financial autonomy (Anderson and Eswaran 2009; Kantor 2003; Rammohan and Johar 2009). This is not surprising since they have direct access to a source of income. However, employment is not associated with women's personal autonomy or household decision-making in Egypt. In developing countries, women's employment can be disempowering and exploitative of women (Atteraya, Kimm, and Song 2014; Olmsted 2005). Labor force participation does not necessarily translate to other dimensions of women's autonomy because not all women are able to convert access to resources into personal power within their households or communities (Haghighat 2013; Kabeer 1999). In contrast, education is an important determinant of women's household decision-making, but not physical autonomy or mobility in 2012. Higher educational attainment may give women a greater sense of personal control and improved communication skills (Murphy-Graham 2010), which likely helps women negotiate household decisions. However, since only a quarter of women participate in the labor market in Egypt (Assaad, Nazier, and Ramadan 2015), educated women who are unemployed are likely largely confined to the home environment (Haghighat 2013). It is unsurprising, then, that higher education is not associated with greater mobility outside the home.

Across all autonomy outcomes, household wealth and region are reliably associated with all dimensions of women's autonomy. Autonomy—operationalized as household decision-making, mobility, and financial autonomy is lower among the wealthiest women compared

to the poorest women. Although this might seem counterintuitive, unlike poor women, those in wealthier families are more likely to have household help to take care of errands and other needs outside the household. In fact, women in the top quintile of wealth participate in fewer decisions and have less mobility compared to the poorest women. This does not necessarily mean that women in wealthy households are not autonomous and suggests that the evaluation of personal and physical autonomy in Egypt may be highly dependent on household socioeconomic status.

As expected, the women in both rural and urban Upper Egypt have less autonomy compared to women in the Cairo area. Despite the dimension of autonomy being measured, women in Upper Egypt have less autonomy compared to women in Lower Egypt over time. This result is consistent with research that shows that women in Upper Egypt are significantly worse off across most women's health outcomes; although part of the reason for poor health may also be the greater poverty of Upper Egypt (Yount, Zureick-Brown, and Salem 2014). Over time women in all regions have less personal and economic autonomy compared to women in Cairo. The lack of women's access to financial resources in Upper Egypt in 2012 may also be related to the economic downturn that Egypt experienced between 2006 and 2012. Results indicate that women have more autonomy in governorates with a higher share of women in the labor force. The governorates in Upper Egypt are the least developed and most impoverished (Handoussa 2008). The gender gap in education in Upper Egypt is the highest, and the governorates of Lower Egypt are generally more progressive towards women than those in Upper Egypt (Yount and Rashad 2008). Given the lack of resources women experience in Upper Egypt, it is not surprising that they exercise less control compared to women in the rest of the country.

The community variation suggests that social factors, while not directly tested in the models, are not conducive to promotion of autonomy in Egypt. Findings indicate that community of residence is a determinant of autonomy above and beyond that of individual and household factors and is significantly related to personal, physical, and economic autonomy over time. This highlights the importance of the woman's geographical and social location in her access to resources, level of control, and ability to exercise personal power in the household. The actual pathways for community variation are still unclear because other community factors like political and economic systems may affect autonomy (Haghighat 2013). Based on these results, strategies for facilitating women's autonomy are more complex than many observers contend. To promote women's autonomy, greater attention needs to be paid to how women operate in their communities and households and how regional social norms affect women and their families. Findings align with other work that finds community context plays a role in women's empowerment in Egypt (Assaad, Nazier, and Ramadan 2015), and strategies to enhance women's autonomy need expand beyond education and employment to make community level changes (Jejeebhoy and Sathar 2001).

These findings demonstrate that women's characteristics are differentially associated with autonomy depending on the dimension of autonomy being measured. The individual and household determinants that shape women's autonomy vary based on the type of autonomy – personal, physical, or economic autonomy being considered. For example, young women with a higher education, who were older than 18 at first marriage, and who live in Cairo or

Alexandria and the Suez Canal are most likely to have greater personal autonomy in household decision-making over time. In contrast, younger women who have ever worked for pay and who live in Cairo or Lower Egypt are most likely to be physical autonomous over time. Women of all ages with a higher education, who have ever worked for pay, who reside in Cairo or Alexandria and the Suez Canal, and have previously demonstrated personal, physical, and financial autonomy are most likely to have economic autonomy over time. To promote autonomy, women should have access to education and be integrated into the paid workforce in communities with social and political systems that support both men and women with jobs and social services. For Egypt, education is important for personal autonomy, but employment and living in an urban area with greater female labor market participation is important for women's physical and economic autonomy. These findings demonstrate the importance of contextualizing measures of autonomy in different settings and confirm that autonomy is a multidimensional construct.

There are a few limitations. Although this study uses several measures to capture different dimensions of autonomy, there are other measures of women's personal control and measures of reproductive autonomy (Upadhyay, Dworkin, et al. 2014) that are not available in the data. Furthermore, the included measures of autonomy cannot capture all power dynamics within a marital relationship. Household decision-making provides little insight into discussions women may have had with partners. However, in Egypt, women's decision-making with others has been found to be an important attribute of agency (Yount et al. 2015; Cheong, Yount, and Crandall 2017), and associated with women's health and fertility (Samari 2017a). While results establish that communities explain some aspect of women's autonomy in Egypt, the actual pathways for community variation in women's autonomy remain unclear. Future research should consider what community factors are associated with women's autonomy over time.

Conclusion

This study examines multiple dimensions of women's autonomy and an extensive set of characteristics of women's lives, households, and communities during a time period in a country in which the role of women is contested. By demonstrating the significance of community variation, this study adds to a growing body of literature on the importance of community variation in women's empowerment and autonomy (Mason and Smith 2000; Jejeebhoy and Sathar 2001; Acharya et al. 2010; Assaad, Nazier, and Ramadan 2015). Other strengths of this study include using highly contextualized covariates and building on cross sectional research with a longitudinal study design in an important Middle Eastern context where there is a dearth of research on women's autonomy (Upadhyay, Gipson, et al. 2014; Pratley 2016).

This study also uses a large sample of married women over two time points and covariates that are relevant to women's lives in Egypt, providing robust and relevant estimates for autonomy over time. Estimates controls for women's past autonomy. These features strengthen the interpretations of the findings, enhancing their policy relevance for Egypt. Strategies to improve women's autonomy in Egypt need to be mindful of the multiple

dimensions of autonomy and be geared not only towards individuals, but also to households and communities.

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Table 1.

Sample Characteristics and Autonomy Outcome Distribution (Means (SE) or %) of Married Women Ages 15 to 49, 2006 and 2012 Egyptian Labor Market Panel Survey N = 4,655

Key Variables	N	% or Mean (SD)	Key Variables	N	% or Mean (SD)
INDIVIDUAL 2006			HOUSEHOLD 2006		
Age in years	4,655	32.3 (8.72)	Region		
Years of Education	4,655	7.29 (5.69)	Greater Cairo	470	10.1
Age at First Marriage			Alexandria & Suez Canal	394	8.46
Less than 18 years	1,112	23.9	Urban Lower	576	12.37
18 years or older	3,543	76.1	Urban Upper	732	15.73
Mean (SD)	4,655	20.4 (4.02)	Rural Lower	1,385	29.75
Value of Dowry			Rural Upper	1,098	23.59
No Response	1,250	26.85	Household Wealth Index		
No Amount	1,795	38.56	Poorest	878	18.86
Some Amount	1,610	34.59	Poorer	1,023	21.98
Related to Husband			Middle	1,030	22.13
No	3,167	68.03	Richer	891	19.14
Yes	1,488	31.97	Richest	833	17.89
Ever Worked			SPOUSE 2006		
No	3,241	69.62	Husband's Age in years	4,655	39.3 (10.1)
Yes	1,414	30.38	Husband's Years of Education	4,655	8.65 (5.49)
AUTONOMY					
Household Decision-Making 2006***	4,655	6.05 (2.73)	Household Decision-Making 2012	4,655	5.58 (3.66)
Mobility 2006***	4,655	2.05 (0.68)	Mobility 2012	4,655	2.55 (0.81)
Financial Autonomy 2006***	4,655	0.65 (0.48)	Financial Autonomy 2012	4,655	0.60 (0.49)

Notes:

* p<0.05,

** p<0.01,

*** p<0.001 for differences between years

Table 2.

Bivariate Negative Binomial, Ordinary Least Squares, and Logistic Regression Models of Married Women's Autonomy in 2012, 2006 and 2012 Egyptian Labor Market Panel Survey N=4,655

Key Variables	Decision-Making		Mobility		Financial Autonomy	
	Negative Binomial		OLS		Logistic	
	IRR	(SE)	b	(SE)	OR	(SE)
Age (years)	0.96***	(0.00)	-0.01	(0.00)	1.02***	(0.00)
Education (years)	1.03***	(0.00)	0.01	(0.00)	1.03***	(0.01)
Older than 18 at First Marriage	1.20***	(0.04)	0.08**	(0.03)	1.32***	(0.10)
Dowry (Ref=None)						
No Response	1.03	(0.04)	0.08*	(0.03)	1.29**	(0.11)
Some	0.89***	(0.03)	-0.01	(0.03)	1.10	(0.08)
Related to Husband	0.94*	(0.03)	-0.10***	(0.03)	0.72***	(0.05)
Ever Worked	0.95	(0.03)	0.08**	(0.03)	1.60***	(0.12)
Region (Ref=Greater Cairo)						
Alexandria & Suez Canal	1.00	(0.06)	-0.33***	(0.06)	0.74	(0.13)
Urban Lower	1.01	(0.05)	-0.08	(0.06)	0.65**	(0.11)
Urban Upper	0.90*	(0.05)	-0.27***	(0.05)	0.28***	(0.04)
Rural Lower	1.03	(0.05)	-0.02	(0.05)	0.50***	(0.07)
Rural Upper	0.81***	(0.04)	-0.27***	(0.05)	0.30***	(0.04)
Household Wealth Index (Ref=Poorest)						
Poorer	1.05	(0.04)	-0.09*	(0.04)	1.01	(0.10)
Middle	1.11**	(0.05)	-0.03	(0.04)	1.19	(0.12)
Richer	1.15***	(0.05)	-0.08	(0.04)	1.19	(0.13)
Richest	0.99	(0.04)	-0.13**	(0.04)	1.26*	(0.14)
Husband's Age (years)	0.97***	(0.00)	-0.01	(0.00)	1.01***	(0.00)
Husband's Education (years)	1.02***	(0.00)	-0.01*	(0.00)	1.01	(0.01)

*** p<0.001. Standard errors in parentheses

Notes:

p<0.05,

*

,10<0.01

**

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Table 3.

Multilevel Negative Binomial and Ordinary Least Squares Models of Married Women's Autonomy in 2012, 2006 and 2012 Egyptian Labor Market Panel Survey N=4,655

Key Variables	Decision-Making				Mobility			
	Negative Binomial				OLS			
	Model 1		Model 2		Model 1		Model 2	
	IRR	(SE)	IRR	(SE)	b	(SE)	b	(SE)
Household Decision Making 2006	1.04***	(0.00)	1.04***	(0.00)	0.02***	(0.01)	0.02***	(0.01)
Mobility 2006	1.16***	(0.02)	1.14***	(0.02)	0.16***	(0.02)	0.14***	(0.02)
Financial Autonomy 2006	1.04	(0.03)	1.03	(0.03)	-0.03	(0.03)	-0.03	(0.03)
Age (years)	0.95***	(0.00)	0.95***	(0.00)	-0.01**	(0.00)	-0.01**	(0.00)
Education (years)	1.01***	(0.00)	1.02***	(0.00)	-0.01	(0.00)	0.01	(0.00)
Older than 18 at First Marriage	1.10**	(0.03)	1.08*	(0.03)	0.061	(0.03)	0.06	(0.03)
Dowry (Ref=None)								
No Response	1.01	(0.03)	0.98	(0.03)	0.054	(0.04)	0.04	(0.04)
Some	1.01	(0.03)	1.01	(0.03)	-0.01	(0.03)	0.01	(0.03)
Related to Husband	0.98	(0.02)	1.01	(0.02)	-0.05	(0.03)	-0.03	(0.03)
Ever Worked	1.04	(0.03)	1.06*	(0.03)	0.07*	(0.03)	0.09**	(0.03)
Region (Ref=Greater Cairo)								
Alexandria & Suez Canal	-	-	0.96	(0.06)	-	-	-0.32***	(0.08)
Urban Lower	-	-	0.98	(0.05)	-	-	-0.08	(0.07)
Urban Upper	-	-	0.90*	(0.05)	-	-	-0.21**	(0.07)
Rural Lower	-	-	0.99	(0.05)	-	-	-0.04	(0.06)
Rural Upper	-	-	0.81***	(0.04)	-	-	-0.23***	(0.07)
Household Wealth Index (Ref=Poorest)								
Poorer	-	-	0.93	(0.03)	-	-	-0.12**	(0.04)
Middle	-	-	0.91*	(0.04)	-	-	-0.07	(0.04)
Richer	-	-	0.94	(0.04)	-	-	-0.14**	(0.05)
Richest	-	-	0.87**	(0.04)	-	-	-0.16**	(0.05)

Key Variables	Decision-Making				Mobility	
	Negative Binomial		OLS			
	Model 1	Model 2	Model 1	Model 2	b	(SE)
	IRR	(SE)	IRR	(SE)	b	(SE)
Husband's Age (years)	-	-	1.00	(0.00)	-	0.01
Husband's Education (years)	-	-	1.00	(0.00)	-	-0.01*
BIC	-14308.77	-14379.48	-22849.13	-22871.91		
Likelihood Ratio Test	16.98***	11.98***	102.96***	74.47***		
Variance at Level 1 (Individual Level)			0.58	0.01	0.57	0.01
Variance of Region at Level 2 (PSU Level)	0.01	0.00	0.05	0.01	0.04	0.01
ICC			0.09	0.01	0.07	0.01

Standard errors in parentheses

*** p<0.001.

** p<0.01,

* p<0.05,

Notes:

Table 4.

Multilevel Logistic Regression Models of Women's Financial Autonomy in 2012: Married Women Ages 15 to 49 at Wave II, 2006 Egyptian Labor Market Panel Survey N=4,655

Key Variables	Financial Autonomy		Financial Autonomy	
	Model 1		Model 2	
	OR	(SE)	OR	(SE)
Household Decision Making 2006	1.07 ***	(0.02)	1.06 ***	(0.02)
Mobility 2006	1.39 ***	(0.08)	1.33 ***	(0.08)
Financial Autonomy 2006	1.24 **	(0.10)	1.18 *	(0.09)
Age (years)	1.01	(0.01)	1.00	(0.01)
Education (years)	1.01	(0.01)	1.03 **	(0.01)
Older than 18 at First Marriage	1.07	(0.10)	1.04	(0.10)
Dowry (Ref=None)				
No Response	1.12	(0.12)	1.03	(0.11)
Some	1.10	(0.10)	1.10	(0.10)
Related to Husband	0.85 *	(0.07)	0.91	(0.07)
Ever Worked	1.47 ***	(0.13)	1.58 ***	(0.14)
Region (Ref=Greater Cairo)				
Alexandria & Suez Canal	-	-	0.70	(0.16)
Urban Lower	-	-	0.69	(0.15)
Urban Upper	-	-	0.29 ***	(0.06)
Rural Lower	-	-	0.50 ***	(0.09)
Rural Upper	-	-	0.34 ***	(0.07)
Household Wealth Index (Ref=Poorest)				
Poorer	-	-	0.88	(0.10)
Middle	-	-	0.91	(0.11)
Richer	-	-	0.68 **	(0.09)
Richest	-	-	0.70*	(0.11)
Husband's Age (years)	-	-	1.01	(0.01)
Husband's Education (years)	-	-	0.99	(0.01)
BIC	-27116.70		-27135.99	
Likelihood Ratio Test	93.98 ***		63.92 ***	
Variance of Region at Level 2 (PSU Level)	0.40	0.08	0.10	0.12
ICC	0.11	0.02	0.09	0.02

Notes:

* p<0.05,

** p<0.01,

*** p<0.001. Standard errors in parentheses