

International migration from Ghana: A gender analysis of the determinants

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Abstract

Migration, in general, continues to be an area of interest with the continuous increase in mobility from essentially less deprived areas. The interplay of gender in migration also introduces a vital layer of heterogeneity in the factors that shape the migratory process. This study complements the extant literature by providing a quantitative analysis of the understudied determinants of migration from Sub-Saharan African countries. To investigate the determinants affecting the migration decisions for men and women, we employ longitudinal data collected within the Migration between Africa and Europe (MAFE) project. Using the discrete-time event history logit model, we first estimate a pooled model to investigate the gender difference in emigration from Ghana. The empirical finding suggests no significant difference between males and females in migration. However, using a separate model for males and females, we find that some determinants influencing males' migration significantly differ from females. The study finds that the age of men impacts migration. Moreover, the migrant network in Europe facilitates migration for males and females. However, they offer more assistance for males than females. We also found that the migrant network composition, type, or characteristics significantly influence migration in the separate models for males and females. Furthermore, economically active or unemployed females are more likely to migrate than females studying. Males are more likely to migrate if they are retired. Finally, childbearing deters migration, especially for women. Specifically, having a child below eight deters migration for women.

Keywords: *International migration, migrant network, gender, logit and determinants*

1. Introduction

Migration and its gender dimension, in general, remains an area of interest as people continually move from their place of origin. The interplay of gender in migration introduces a vital layer of heterogeneity in the factors that shape the migratory process. Variations in gender roles hold different implications for migration. In certain parts of the world, such as Mexico and Latin America, men's social and economic roles influence their roles in society. They are considered providers and must search for work (Kanaiaupuni, 2000). Women, on the contrary, are viewed as caregivers and are responsible for domestic duties (see, e.g. Kanaiaupuni, 2000). In Mexico, Senegal and certain parts of Latin America, women are discouraged from going for wage employment and migration (Toma and Vause, 2014). It is believed that their place is in the house (see Chant, 1991 and LeVine, 1993).

Over the past two decades, several studies have demonstrated that migration (internal or international) is a gendered process (Kanaiaupuni 1995, 1998, and 2000; Cerrutti and Massey 2001;

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Fussell and Massey 2004; Feliciano 2008; and Donato 2010). Some studies in the economics of migration primarily focus on the migration of men (Dustmann, Schonberg, and Stuhler 2016). In Mexico, several studies have been conducted to examine the determinants that influence migration (Kanaiaupuni 1995, 1998, and 2000; Cerrutti and Massey 2001; Fussell and Massey 2004; Feliciano 2008; and Donato 2010). For example, Kanaiaupuni (2000) suggested that migration is profound, gendered process and that the conventional explanations for migration by men in many cases do not apply to women. Cerrutti and Massey (2001) also found that employment reasons stimulate male out-migration. In contrast, the migration of other family members stimulates female out-migration. It was further suggested by Donato (2010) that Migration out of Mexico essentially occurs without legal documentation and is predominantly male-dominated. Aside from the studies that investigated migration from Mexico to the United States (US), Toma and Vause (2014) employed the longitudinal data from the Migration between Africa and Europe (MAFE) project. Their study examined the role of the migrant network on international mobility in Sub-Saharan Africa, particularly in Senegal and Congo.

In Ghana, an increasing number of educated, qualified, and highly skilled male and female young professionals are moving out of the country to settle in another country in search of a better standard of living (see United Nations Department of Economic and Social Affairs-UN DESA, 2020; International organisation of Migration-IOM, 2020). According to the data from the UN DESA, the proportion of Ghanaians (mostly skilled) who migrate to destinations such as Europe and North America has increased persistently from 1990 to 2020. The proportion of skilled and educated Ghanaians who migrated out of the country in the 1980s and 1990s was very high due to a deterioration in the economy (Anarfi et al., 2003). Though it slowed down in the 2000s (Anarfi et al., 2003), it peaked after 2012 due to the uncertainty in the political atmosphere resulting from the legal challenge of the election results, which made it unattractive to conduct business (Amoah et al., 2021). The recent COVID-19 pandemic, which has worsened Ghana's economic and health systems, will most likely increase emigration from Ghana. IOM (2020) report shows "that 56 percent of the doctors who are trained in Ghana and 24 percent of the nurses trained in Ghana are now working abroad." "Similarly, the report shows that 60 percent of faculty positions in polytechnics, and 40 percent of positions in university remain vacant because there simply are not enough qualified people to take up those positions (IOM, 2020)." Data from the UN DESA (2020) also shows a sharp increase in the number of males and females Ghanaian migrants who have moved abroad from 2000 to 2020, with a significant increase in female migration to male migration. This is an issue of brain drain, which can have a detrimental effect on the country's growth and development.

Notwithstanding, the studies on the determinants of migration and the gender dimension of migration in Ghana are primarily limited to internal migration (Boakye-Yiadom 2008; Ackah and Medvedev 2010 and Reed, Andrzejewski & White 2010). Not much can be said about a study that provides a quantitative analysis of the determinants influencing individuals' decision to migrate from Ghana. This is mainly due to data limitations. Anarfi et al. (2000) have attempted to unveil the factors of out-migration for males and females in Ghana; however, their study employed a descriptive analysis. Much recently, Amoah et al. (2021) examined the effect of human capital on net migration; however, their analysis was done at the macro level and not gender-based. Their finding supports the brain drain argument in Ghana because increasing human capital favours emigration. It is vital to conduct a study to understand how the individual characteristics or determinants influence out-migration. The findings will further aid in crucial policy decisions to help curb the issue of ever-increasing migration.

In examining the determinants of migration, this study introduces key variables barely studied in the body of literature (Kanaiaupuni, 2000; Toma and Vause 2014). The key variable being introduced here is the migrant network. We further examined how the migrant network and its characteristics or composition, such as the gender of the network, the length of stay of the migrant network and how the relationship with their migrant network affects one's migratory decision. This network variable introduced in this study has been used by Toma and Vause (2014) in their study on the role of networks on male's and female's migratory decisions. However, their study was conducted in Senegal and Democratic Republic of Congo. Our study adds to the existing literature by providing a quantitative analysis of the determinants of migration from Sub-Saharan

Africa based on a gender dimension. The study employs the discrete-time event logit model to examine the determinants of migration for males and females because it examines the time until the event occurred. The study used the MAFE dataset collected in 2009 instead of the recent Ghana Living Standard survey conducted in 2017 or the Population and Housing Census conducted in 2021 because it covers various factors (such as the migrant network and its characteristics) lacking in the datasets in Ghana. The findings from this study will help policymakers and government stakeholders improve upon future household and individual surveys by including some of these key variables to help investigate some of these key factors of out-migration in recent times.

The rest of the paper is organised as follows: section two provides a brief history of international migration patterns in Ghana and reviews the relevant empirical literature on the factors or determinants of migration. Section three describes the data and the methodology used. Section four presents the findings and the discussion and conclusion of the results.

2. Literature review

2.1. A brief history of emigration patterns in Ghana

This section highlights Anarfi et al. (2003) phases of international migration and the current dynamics of international migration while incorporating the gender dimension. Importantly, emigration data disaggregated by relevant characteristics such as sex is limited (IOM, 2020). The UN DESA (2020) only provides data from 1990 to date, and the data demonstrate that prior to the 2000s, emigration was male-dominated. The study follows through all the phases to understand the dynamics throughout Ghana's migration history. The first phase is known as the period of minimal emigration. This period ranges from pre-colonial times to the late 1960s. During this period, international migration from Ghana comprised a few individuals who were primarily students and professionals. Most of the destination countries of these migrants were the United Kingdom and other English-speaking countries (Anarfi et al. 2000). Emigrants from Ghana emigrated mostly to further their education at European and American universities. In the context of international movements in Africa, Odotei (2002) identified that most Ghanaians from the fishing communities were known to have migrated to Benin and Ivory Coast. Besides, some Ghanaian professionals worked in the public services of Gambia, Botswana and Sierra Leone.

The second phase is the period of the initial emigration. This period took up from 1965 to 1980. During this period, Ghana experienced a grave economic crisis with a high balance of payments deficit, high inflation rate, unstable exchange rate, high unemployment rate and social malaise (Anarfi et al. 2000). The state of the economy at the time made the country less attractive for the citizenry, so by the end of the decade, most Ghanaians (teachers, lawyers, and administrators) migrated to Uganda, Botswana, Nigeria and Zambia in search of jobs (Anarfi et al. 2000). Others travelled for education but stayed in that location after the programme of study. Surdakasa (1977) reports that the female component of Ghanaian migration was small until the 1970s. Women moved in their capacity as accompanying spouses, and these moves were short distances.

The phase of large-scale emigration, which spans from 1980 to 1990, follows the period of initial emigration. The poor economic conditions that prompted macroeconomic adjustments in Ghana's Structural Adjustment Programme and Economic Recovery Programme in the 1980s resulted in large-scale redundancies in the public sector and, as a result, another round of emigration to destinations in Europe and North America (Anarfi et al., 2000). Migration of skilled, unskilled and semi-skilled migrants to neighbouring West African countries such as the Ivory Coast and Nigeria continued (Anarfi 1982 and Anarfi et al. 2000). During that period, Rimmer (1993) revealed that roughly two million Ghanaians migrated out of the country and a substantial proportion of them were skilled. At the time, the economy deteriorated, and there was an extreme scarcity of essential items, such as food (van Hear 1998). So migration was considered a coping strategy for most households and individuals.

Anarfi et al. (2003) noted the period from 1990 to the 2000s as the last phase in international migration history, called the period of intensification and diasporization of Ghanaians. Black et al. (2003) pointed out that many Ghanaians have migrated to major cities such as London, Amsterdam, Hamburg, and New York. In addition, Anarfi et al. (2003) write that Ghana was one

of the top ten sending countries to the United Kingdom. A decade after 1990 (that is, 1990 to 2001), it was reported by the UK Home Office that about 21,485 Ghanaians had migrated to the UK. A report from the UN DESA (2020) indicates that 54,254 Ghanaian migrant was in the UK in the year 2000.

In the period after the 2000s up to 2012, emigration fell mainly due to an improvement in democratic governance where there was a smooth transition of power and an improvement in the economy (Amoah et al., 2021). However, the emigration of health workers from Ghana was common during this period mainly to improve their economic conditions (Clemens & Pettersson, 2006). Over 24% of nurses trained in the country in 2009 left to work overseas (IOM, 2009; Allen, 2015). Pilliger (2011, p. 13) found that 71% of nurses who left Ghana between 2002 and 2005 went to the United Kingdom or the United States, based on data from the Ghana Nurses and Midwives Council. Around this period, the proportion of female to male emigration increased significantly, although male emigration out-weighed female emigration (UN DESA, 2020). Regarding gender distribution, females account for more than 40% of Ghanaian emigration (Twum-Baah, 2005). According to the US Census Bureau (2000), there has been a rise in emigration among both males and females in Ghana, with females accounting for 56.4% and males accounting for 43.6% of emigrants. Data also shows that the percentage of Ghanaian emigrants in the UK increase by 10.94% from 2000 to 2005. However, from 2005 to 2010, the number of Ghanaian emigrants in the UK increased by 10.52%. A percentage increase which is less than the 2000 to 2005 percentage increase. In the USA, a similar pattern was observed. The percentage increase from 2000 to 2005 was 13.56%. It decreased to 13.51% (UN DESA, 2020).

After 2012, Ghana recorded a higher emigration, which may be due to the uncertain political environment after the 2012 elections (see Amoah et al., 2021). The uncertainty in the political atmosphere resulted from the legal challenge of the election, which protracted for more than eight months (see Amoah et al., 2021). This was seen as a disincentive to conduct business in the country. Data from the UN DESA (2020) show an increase in emigration to the UK by approximately 14% from 2015 to 2020, higher than the estimated 12.72% from 2010 to 2015. Emigration to the USA increased by approximately 18% from 2015 to 2020. However, from 2010 to 2015, emigration increased by about 15%.

2.2. Empirical Literature

A review of the literature demonstrates that men and women are faced with different constraints on migration. The review summarises the studies investigating migration determinants for males and females.

The effect of education as a determinant of migration is broadly documented in the literature. A work by Elnajjar (1993) revealed that migrants with a higher level of education are more likely to get a job in the destination countries. This means they will be more likely to migrate since the job prospects are high in the destination countries. However, migrant males and females respond to education differently. Kanaiaupuni (2000) pointed out the differences in response to migration. The study found that highly educated females are more likely to emigrate, while males are less likely to emigrate. Similarly, Richter and Taylor (2008) found that Mexican women with a high level of education are more likely to migrate to the US, whereas their male counterpart is less likely. Other studies found a contrary impact of education on migration. For example, Hoddinott (1994) found that females with post-secondary education are not influenced to migrate, while males are influenced positively. Earlier studies revealed a positive effect of education on migration for both males and females (e.g. Katz 2000; Reed, White and Andrzejewski 2010; Ackah and Medvedev 2010 and Chavez and Arslan 2010; Toma and Vause, 2014). For example, Chavez and Arslan (2010) used Mexico household panel data and a Probit model for their study, where they found a positive effect of schooling on migration for both males and females. Based on a bivariate probit model of 1,408 households in the Sierra regions of Ecuador, Katz (2000) revealed that the effect is high among males than females. Contrary to Katz (2000), Reed, White, and Andrzejewski (2010), using a multinomial Logit model, reported that the effect is high among females than males. In Africa, Toma and Vause (2014) found that highly educated men and women in the Democratic Republic of Congo and Senegal are positively selected to migrate. However, the odds were high for

men in Senegal than for women. In Democratic Republic of Congo, the odds were high for women than men.

Age is another factor affecting migration, and according to the empirical literature, the effect differs by gender (Kanaiaupuni 2000; Richter and Taylor 2008; and Awumbila and Ardayfio-Schandorf 2008). In rural Mexico, it was postulated that men above 50 years are less likely to migrate than women above that age (Kanaiaupuni 2000). Women migrate at later ages to reunite with their spouses. Essentially, those nearing their retirement ages may migrate to help their older children and relatives who live elsewhere. Women below 50 years are primarily involved in taking care of their children. The study further brought to bear that men between the ages of 20 and 29 are more likely to make the first migration. In contrast, women of those ages are less likely to migrate. Another finding by Richter and Taylor (2008) proposes that age deters international migration for males more than females. In an internal migration context, Awumbila and Ardayfio-Schandorf (2008) discovered that most females who migrate from the north of Ghana to the south are between the ages of 8 to 45.

Some studies view males as primary migrants, whereas females are characterised as followers (Balan 1981 and Cerrutti and Massey 2001). Those studies consider the role of female migration as a family reunion rather than economic gain (Enchautegui & Malone 1997). In a paper by Kuhn (2005) on the determinants of family and individual migration-a case of Bangladesh, the marriage of people was considered an essential factor in rural-urban migration. One important finding of the paper was that the likelihood of individual migration decreases after marriage. Shanthi (2006) also found a similar conclusion in a paper on female labour migration in India, where it was suggested that the marriage of individuals is the main reason for migration. Other studies have shown that childbearing deters migration; however, as the children age, it promotes migration (Kanaiaupuni 1995).

Migrant network, which was first identified by Massey et al. (1993) as a form of social capital and had to do with the social relationship that an individual form, which may prove useful in the migration process, is also regarded as a determinant of migration. The Migrant network is sometimes referred to in the literature as migrant social capital (Massey et al., 1998; Curran and Rivero-Fuentes, 2003). The Migrant network also has to do with acquaintances and families in the destination areas who serve to bridge the information gap between the prospective migrants and the labour market experience in the destination areas (Massey et al., 1993; Bilecen et al., 2018). The migrant networks also offer assistance in terms of employment and accommodation and even influence the prospective migrants' destination choices (e.g. Pedraza, 1991; Hondagneu-Sotelo, 1994). However, the quality and the type of information may differ between males and females and, for that matter, a variation in the migratory pattern for males and females. Toma and Vause (2014) investigated the effect of the migrant network on international mobility in Senegal and the Democratic Republic of Congo. They found that having a network is a strong determinant of migration. However, they found the effect to be strong among women in each country.

The type and composition of the migrant network may also hold different expectations for men and women. According to Reskin and Padavic's (1994) arguments, a male-dominated network excludes females from certain types of jobs and promotions. An interview by Kanaiaupuni (1995) revealed that established US migrant men are unwilling to sponsor female friends and family because they lay a greater responsibility and obligation than their male counterparts. However, using cross-sectional data from the Mexico Migration Project, Curran and Rivero-Fuentes (2003) assessed the migrant network as a determinant that influences migration for males and females. They concluded that male networks are most likely to facilitate migration for males. In contrast, their female networks most likely influence the female migration. This is consistent with Stecklov et al. (2008), who found that female migration is firmly hinged on the female family networks. Moreover, Richter and Taylor (2008) employed a panel analysis and found that female networks are much more prominent than male networks. It was again revealed that they are essential in explaining both males' and females' decisions to migrate. However, the female network was more important in explaining male migration than the male networks. Based on a much more recent study on international migration, Toma and Vause (2014) investigated the effect of the migrant network on international mobility. They concluded that Senegalese women are more likely to rely

on geographically concentrated networks, close relations and those established abroad for a long time than men. However, both men and women in Senegal and the Democratic Republic of Congo are influenced by either type of gender in Europe.

In summary, many studies in Mexico have demonstrated that out-migration is a gendered process. However, in Africa, studies on the determinants of emigration from Africa by gender are limited, partly due to data limitations (Toma and Vause 2014). In Ghana, Boakye-Yiadom (2008) and Ackah and Medvedev (2010) conducted a study on the gender dimension of migration in Ghana, but it was limited to internal migration. Reed, Andrzejewski & White (2010) also performed a gender-related study on migration by employing the event history analysis. However, again their study was only limited to internal migration. Although empirical knowledge exists on Ghana's determinants of internal migration, little is known about international migration. Anarfi et al. (2000) have made remarkable strides in examining the push-pull factors of out-migration from Ghana; however, their study was limited to descriptive analysis. Amoah et al. (2021) also examined the impact of human development on net migration; however, their study was conducted at the macro level and not gender-based. Data support that there are several Ghanaians outside of Ghana (UN DESA, 2020). Most of these emigrants are males. However, the characteristics or determinants that influence their emigration from Ghana are still largely unknown. Neither is there any knowledge of an empirical analysis of the determinants of out-migration based on the gender dimension in Ghana. In examining the determinants, this study includes some key indicators of migration (such as migrant networks and their characteristics or composition) that have not been comprehensively dealt with in the literature. Moreover, the effect of these indicators and other indicators on migration has not been studied in Ghana.

3. Methodology

3.1. Theoretical framework

Regarding the theoretical framework, there has not yet been a single one that organises the interaction of all the relevant factors of international migration, which will then serve as a basis for empirical work (Bodvarsson and Berg, 2013). Given the above challenges, the study is built on the Clark, Hatton, and Williamson (CHW) migration model, which is closely related to our empirical work. We modified the model to incorporate the gender differences in migration.

The CHW model is an extension of Borjas' (1986 and 1991) model on international migration, which considers the effect of migration's non-pecuniary costs and explicit immigration constraints. The CHW models an individual's decision to migrate as a function of the destination or origin country income differences, the distributions of skill levels, and several types of migration costs.

The model first assumed that an individual has only one destination if they decide to migrate, and it is irreversible. It is also assumed that the destination and the origin countries have different earnings levels for the prospective migrant. Borjas (1991) assumed that an individual's earnings are based on the socio-economic characteristics (observable characteristics) of the migrant in a particular country as opposed to differences in the market and policies. The individual's earnings are thus equal to the average valuation of the socio-economic characteristics in that particular country plus the error term. Borjas concluded that earning differences in a particular country are dependent on observable characteristics. Thus, a person's earnings in:

Origin country is:

$$In(w_0) = \mu_0 + \delta_0 s + \varepsilon_0 \quad (1)$$

Where, w_0 is the earnings in the home country, δ_0 is the rate of return to schooling in the origin country, s is the level of schooling, μ_0 is the mean income home country residents would get if they stayed at home, and ε_0 is random, measuring the unobserved characteristics and uncorrelated with μ_0 and $\delta_0 s$, with a mean of 0 and a variance of σ_0^2

Destination country;

$$In(w_1) = \mu_1 + \delta_1 s + \varepsilon_1$$

Where, w_1 is the earnings in the destination country, δ_1 is the rate of return to schooling in the destination country, s is the level of schooling, μ_1 is the mean income the would-be migrants would get if they migrate, and ε_1 is random, measuring the unobserved characteristics with the same assumption above.

Suppose the level of schooling distribution in the origin country's population is

$$s = \mu_s + \varepsilon_s$$

Where, μ_s is average income from schooling, ε_s is normally distributed with mean zero and variance σ_s^2 . Assume that ε_s is uncorrelated with the difference $(\varepsilon_1 - \varepsilon_0)$.

The variance term σ_0^2 and σ_1^2 in both models is used to measure the level of inequality in a country of origin and destination, respectively. So if the value of σ_1^2 is larger, then it means that income inequality is greater in the destination country. Hence, any prospective migrant with a given socioeconomic characteristic will likely earn a large amount on his or her human capital. However, he or she is at risk of earning a small amount of money. Borjas again assumed that the random variables $(\varepsilon_0$ and $\varepsilon_1)$ have a random coefficient ρ to ensure skills transferability.

The costs (C) of migration captured by the CHW model include:

1. Individual-specific migration cost (z). It has to do with individual networks, for example, friends and families in the destination country. Therefore, individuals that have friends and families in the destination country have less cost of migration as opposed to individuals that do not.
2. Direct cost. The cost is related to distance, which is the same for all individuals in a particular country.
3. Migration costs result from "a skill-selective" immigration policy. Skilled migrants face lower costs than unskilled migrants.
4. Migration costs that result from quantitative restrictions on immigration;

We introduce gender into the model by arguing that men and women share different roles in most societies (Sassen, 1991; 1998). Whereas females are perceived to be primarily responsible for housekeeping and childcare, men are seen as the providers (Kanaiaupuni, 2000). Although both men and women have several constraints when it comes to migration, women's constraints significantly outnumber men's (Kanaiaupuni, 2000). This constraint can be monetary or nonmonetary (for example, childbirth) costs that prevents migration and results in disparities in migratory patterns between males and females. In this regard, we argue that males will be more likely to migrate than females because their cost (C) is relatively lower than their female counterparts. Therefore, an individual will migrate if $w_1 > (w_0 + C)$ or $w_1 - (w_0 + C) > 0$. Taking the natural log of both side yields, s /he will migrate if $M > 0$. Thus, M now defined as

$$\ln w_1 - \ln (w_0 + C) > 0 \quad (6)$$

If $\ln (w_0 + C)$ is approximately equal to $\ln (w_0) + C/w_0$ ¹ Borjas assumed that $C/w_0 = \pi$ which is the "time-equivalent" measure of migration cost (mobility cost) is constant for all individuals in the home country. Then our new equation is now

$$\ln w_1 - \ln (w_0) - C/w_0 > 0 \quad (7)$$

By substituting equation 1, 2 and 3 into 5 and manipulating, individuals will migrate if

$$M = (\varepsilon_1 - \varepsilon_0) + (\delta_1 - \delta_0) \varepsilon_s > -[(\mu_1 - \mu_0 - \pi) + (\delta_1 - \delta_0) \varepsilon_s] \quad (8)$$

¹For example suppose that home income is GHc100 and migration cost C is 10 , then $[\ln(100 + 10) = 4.7005] \approx \ln(100) + 10/100 = 4.7052]$

Equation (6) implies that migration will occur if the destination country rewards the migrants more for their particular skills and if the net average earning in the destination country is high. It helps explain whether an individual will migrate or not.

In order to look at the migration rate, the following procedure will be followed even though, in this study, migration will be measured as a binary or categorical variable. To start with, let $\varphi = (\varepsilon_1 - \varepsilon_0) + (\delta_1 - \delta_0) \varepsilon_s$. By introducing probability, Borjas standardised the immigration rate by using the Z value

$$Pr \{ \varphi > -[(\mu_1 - \mu_0 - \pi) + (\delta_1 - \delta_0) \varepsilon_s] \} \\ Pr \left\{ Z > \left(\frac{ -[(\mu_1 - \mu_0 - \pi) + (\delta_1 - \delta_0) \varepsilon_s] }{ \sigma_\varphi } \right) \right\} = 1 - \Phi(Z) \quad (9)$$

3.2. Data Source

This study employs the MAFE² micro-data (Migration between Africa and Europe) project conducted in Ghana in 2009. On the part of Ghana, the MAFE project focused on migration flows to Europe (the Netherlands and the United Kingdom (UK)). In Ghana, the survey took place in two cities (Accra and Kumasi).

MAFE project is based on two questionnaires: A household questionnaire and a biographic questionnaire. The household questionnaire was used in Africa, while the biographic questionnaire was used in Africa and Europe. The primary themes covered in the household questionnaire include “Socio-demographic variables of the individuals, brief migration histories, remittances, household assets, and housing history.” On the contrary, the biographic questionnaire comprises the life histories of all surveyed individuals, regardless of their migratory status at the time of the survey (non-migrant, return migrant, current migrant). “Family formation, education and employment, housing, migration, investments (housing, business, community facilities or infrastructure)” are the primary topics covered.

Even though the MAFE data was obtained in 2009, it covers various aspects of the factors that impact migration that is not covered in most Ghanaian household and individual surveys. The migrant social network and its characteristics, for example, have been explored in most international migration studies but are absent in the Ghanaian context due to data limitations (see Fussell and Massey, 2004; Curran and Rivero-Fuentes, 2003; Toma and Vause, 2014). The migratory network and other key determinants of emigration are topics that need to be investigated in Ghana, and the MAFE dataset can aid with that. The findings of this study will assist policymakers in making important migration decisions, as well as government stakeholders involved in data collection on individual and household demography and well-being.

Following the work of Kanaiaupuni (2000); Davis, Stecklov and Winters (2002); Fussell and Massey (2004); Reed, Andrzejewski & White (2010), and Toma and Vause (2014), this study adopts the life history data for the analysis due to the longitudinal nature of the data. In that case, the data from the MAFE biographic questionnaire containing all surveyed individuals’ life histories are used. The variables employed to examine the propensity to migrate are time-varying (except for education and sex), and the inclusion of the variables follows from the studies on the determinants of international migration (Kanaiaupuni, 1995; Curran and Rivero-Fuentes, 2003; Richter and Taylor, 2007; Toma and Vause, 2014). We included age, number of children, age of children, marital status, asset holdings, activity status, time period, educational level, and migrant network. For the migrant network, we included the type of ties, the length of stay and the gender of the migrant network.

²The institutions involved in the collection of data are IPDSR in Senegal, the Department of population and development of the University of Kinshasa in Democratic Republic of Congo and the Centre for Migration Studies of University of Ghana in Africa. In Europe, INED in France, FIERI in Italy, University Pompeu Fabra in Spain, University of Sussex in the UK, University of Maastricht in the Netherlands, and the Catholic University of Louvain (UCL) in Belgium were responsible.

3.3. Sample of the study

Based on the life history questionnaire, 1,243 biographies were completed. Of the total biographies, 319 are return migrants, 840 are non-migrants, and 84 are partners of migrants in Ghana. In Europe also, 41.6% (82,586) of the total migrant stock in the UK and 6.7% (13,310) of the total migrant stock in the Netherlands were Ghanaian expatriates (UN DESA, 2020). Of the total Ghanaian migrant stock in the UK and the Netherlands, 422 individuals were surveyed. 273 were surveyed in the Netherlands, and 149 were surveyed in the UK. 79.2% and 72.5% of those surveyed in the UK and the Netherlands have lived in Accra and Kumasi for at least a year. Hence, the total sample is 1,665.

3.4. Empirical estimation

In this study, international migration is defined as the act of an individual leaving his country of residence or nationality to settle in another person's country to stay there for at least a year (United Nations Statistics Division, 1998). As such, to investigate whether men and women experience different determinants of migration and given the retrospective nature of the data, the study employs the discrete-time event history analyses to examine the first adult migration³ among men and women. Several studies on migration and its determinants have used this type of analysis as it examines the time until the event occurs (see Kanaiaupuni, 2000; Davis, Stecklov and Winters, 2002; Curran and Rivero-Fuentes, 2003; Fussell and Massey, 2004; Reed, Andrzejewski & White, 2010; Toma and Vause 2014).

3.5. Formulation of the discrete-time event history logit model

As Allison (1982) discussed, the method splits time into calendar years. It estimates the probability of observing the event (migration) within each interval until it occurs. Also, the time-varying variables are lagged by one year to explain how the previous year's characteristics affect the current year's migration. The method is beneficial because it prevents treating the consequences of migration for its determinants. First, a gender-pooled model was constructed to investigate whether there is any gender difference in international migration. Second, two models for men and women will also be constructed to examine how the determinants of migrations affect them differently.

Due to the longitudinal nature of the data, a test for individual effect or unobserved heterogeneity was carried out. It was revealed that there is no unobserved heterogeneity implying that the random or the fixed effect logistic model is not the best technique to use (see Appendix A, a.). The study tested for individual effect or unobserved heterogeneity for the male and the female model and made the same conclusion (see, Appendix A, a.).

Given the above, it will be appropriate to specify the model as follows:

$$M_{it} = \alpha + \beta_1 X_i + \beta_2 Z_{i(t-1)} + \varepsilon_{it} \quad (10)$$

The analysis will be based on a discrete-time event history logit model to estimate the probability of an event (migration) occurring in the current year resulting from the previous year's characteristics. The model will be uniquely interpreted using the odds ratio (relative risk ratio). Thus, the odds of experiencing the event (migration) in a function of individual characteristics over time:

$$\ln \left(\frac{\rho_{it}}{1 - \rho_{it}} \right) = \alpha + \beta_1 X_i + \beta_2 Z_{i(t-1)} \quad (11)$$

³The study will look at the first migration of adults who are 18 and above to see the real effect of the network (friends and families who leave abroad). The reason is that the previous migrations of an individual may influence the individual's decision to migrate because the individual will gain some migration experience and the true effect of the network will not be seen.

Where in equation (1&2); ρ_{it} is the probability of individual i migrating in year t ; M_{it} is individual i migrating in year t ; X_i is the vector of explanatory variables constant over time (e.g. sex); $Z_{i(t-1)}$ is the vector of time-varying explanatory variables, lagged by one year; β s are the respective vector of coefficient; and ε_{it} is the stochastic error term which is normally distributed with mean zero and a variance constant.

4. Findings

4.1. Descriptive statistics

Descriptive characteristics of the dependent variables by gender

Table 1 shows the total number of migrations in a person-year, the first adult migration from Ghana (Accra and Kumasi) to Europe (the Netherland and the United Kingdom), the total number of men and women interviewed, and a t-test, testing the difference between the mean of the men and the women group.

Of a total number of individuals (1,665) surveyed both in Ghana and Europe (the Netherland and the United Kingdom) and the total (39,606) contributed person-years adult migration, 336 adults aged 18 and above made their first travel to Europe of which 175 are moves made by men, and 161 are moves made by women. 43.06% of the total number of individuals surveyed were men, and 56.94% were women. Of the total person-year, a total of 39,270 no moves were reported. A t-test showing the significant differences between the mean of men and women for no move and first move revealed a significant difference between the two means.

Table 1: Descriptive characteristics of the dependent variables by gender

Independent variable	Number of person-year	Men		Women		Sig. diff.
		Mean or %	Standard deviation	Mean or %	Standard deviation	
Number of individuals surveyed (1,665)		43.06 %		56.94 %		
Number of men (717)						
Number of women (948)						
Person-year migration	39,606					
No move	39,270	.9899	.0999	.9928	.0848	***
First adult move to Europe	336	.0101	.0999	.0072	.0848	***
First male adult moves to Europe	175					
First female adult moves to Europe	161					

Note: To test the significance level of the gender differences, t-tests are carried out on the mean of the variables and compared with the significance of * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The abbreviation n.s means not significant. The results are also unweighted. Source: Researcher's compilation from MAFE Biographic data.

Descriptive Characteristics of Explanatory Variables in a Person-Year by Gender

Table 2 shows the unweighted descriptive characteristics of the variables in the individually contributed person-year (the number of individuals and the period each individual recalled) by gender. The table also displays the mean, standard deviation, and t-test statistics, testing the significant difference between the mean of men and women. It is important to note that these are the individual person-year characteristics reported throughout the lifetime of the 1,665 individuals.

It is observed from Table 2 that the collective individual person-years varies from one variable to another and from one individual to another, as some individuals reported more to some events than others. For example, a variable like children will have long person-year information if most individuals have children. In this case, the contributed person-year is 26,392 total contributed person-year. On the contrary, assets owned will have a short person-year if most of the individuals studied reported to have no, small or have acquired and disposed of a limited number of assets. In this case, those with at least one asset reported a total of 9,654 person-years.

The data revealed that the average age a male will make his first migration to Europe is 28.75 years, and for females, it is 29.31 years. Again, the t-test shows no significant difference between the mean ages of both men and women. It further explains that both men and women who migrated abroad have the same age on average. A greater proportion of men (89.14%) and women (82.61%) who made the first move to Europe are within the youthful age (from 18 to 35 years, see Table A1).

The educational level of both the migrant and the non-migrant is captured as a time-invariant variable in the data. The survey only recorded the individual's level of education at the time the survey took place. The educational level of the individuals at the time of the survey is used in this analysis. It is shown that men have, on average higher secondary and tertiary education. In contrast, more women have no education or basic education than men. The t-test reveals a significant difference between men and women at all levels of education on average.

On the part of children, it is observed that out of a total of 26,392 contributed person-year, more men reported having no children compared to women in their person-year. On the contrary, more women, on average, reported having one or two children than men. Interestingly, men recorded high on average when asked whether they had at least three children. However, there was no significant difference between the two means. These findings are evident because most men, on average, also reported being in an informal union, separated or widowed. They might be left with the children after they separate from their spouses. The results also showed no significant difference between men's and women's averages regarding whether they have one or two children. Only those who reported having no child saw a significant difference between their means. In terms of the children's age, women with children at all age levels are more than men. However, the statistical test showed no significant difference between the two means.

With regards to the activity status, women have more economically active years than men. Also, the data revealed a significant difference between the mean of men and women for all the variables under activity status except for unemployment. Concerning the marital status of the respondents, there is a significant difference between men and women apart from those separated or widowed. Moreover, men who migrated were more than women in all the categories except those who were married. This implies that throughout the collective person-years, men are mostly single or are in informal unions, while most of the women interviewed were married on average. Regarding asset holdings, men have held more assets than women per the total contributed person-year. The t-test also revealed a significant difference in the asset that men and women hold.

Controlling for periods, it turns out that periods before 1980 and after 2000 are the only two periods in which the average migration is significantly different for men and women. The migrant network in Europe is not limited to the networks in the surveyed country (UK and Netherlands) but all other European countries. The t-statistics reveal a significant difference between the mean of men and women. On average, men have more current migrants in their network than women.

4.2. Multivariate analysis of male and female migration

Table 3 presents the result of the discrete-time logistic estimation based on a gender pooled model. The study purposely includes a female dummy to investigate the gender difference in international migration decisions. Secondly, to investigate the individual determinants of out-migration for males and females, Table 4 presents the discrete-time logistic estimation by gender. A Chi-square test is carried out to test the significant difference in the determinants of the male and the female models.

The results showed that the coefficient of gender is not significantly different from zero. This

Table 2: Descriptive Characteristics of Explanatory Variables in a Person-Year by Gender

Independent variable	Number of person-year	Men		Women		Sig. difference
		Mean	Standard deviation	Mean	Standard deviation	
Age		28.7514	6.7412	29.307	8.6693	n.s
Level of education						
No education		.0310	.1734	.1019	.3025	***
Basic education		.1174	.3219	.2555	.43614	***
Secondary education		.5042	.5000	.4697	.4991	***
Tertiary education		.3474	.4761	.1729	.3782	***
Number of living children	26,392					
No child	397	.0222	.1474	.0106	.1023	***
A child	12,860	.4814	.4997	.4909	.4999	n.s
2 children	6,646	.2481	.4319	.2541	.4354	n.s
At least 3 children	6,489	.2483	.4320	.2444	.4297	n.s
Age of children	26392					
No child below 18y	16,805	.6347	.4815	.6380	.4806	n.s
7 to 18 years	8,126	.3071	.4613	.3084	.4619	n.s
Below 7 years	1,461	.0583	.2343	.0535	.2251	n.s
Activity status	61,103					
Studying	23,080	.4260	.4945	.3416	.4742	***
Economically active	32,820	.5170	.4997	.5550	.4970	***
Unemployed	1,356	.0230	.1500	.0217	.1456	n.s
Home makers	2,158	.0099	.0989	.0553	.2287	***
Retired	536	.0113	.1055	.0069	.0826	***
Other inactive	1,015	.0130	.1132	.0195	.1383	***
Marital status	28,754					
Alone and never in union	138	.0071	.0841	.0032	.0560	***
Separated/Widowed	1,145	.0411	.1986	.0389	.1933	n.s
Informal union	4,966	.1913	.3934	.1595	.3661	***
Married	22,505	.7604	.4269	.7985	.4011	***
Asset holding	11,319					
At least one asset	9,654	.1761	.3809	.1581	.3649	***
Time period						
Before 1980		.2577	.4374	.2341	.4235	***
1980 to 1989		.2746	.4463	.2893	.4535	n.s
1990 to 1999		.3120	.4633	.3057	.4607	n.s
2000 to date		.1557	.3626	.1709	.3765	**
Migrant network	29,016					
Current network in Europe	12,415	.4607	.4985	.4164	.493	***

Note: To test the significance level of the gender differences, t-tests are carried out on the mean of the variables and compared with the significance of * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The abbreviation n.s means not significant. The results are also unweighted. Source: Researcher's compilation from MAFE Biographic data.

implies that when it comes to international migration from Accra and Kumasi to the UK or the Netherlands, there is no significant difference between the male and the female migrant. Although the effect of gender on migration is not significant, the determinants that influence migration for males and females can still be heterogeneous for males and females.

For that matter, Table 4 presents the results of the discrete-time history logistic estimations, carried out separately by gender. Before delving into key findings, it is essential to note that the p-value of the test for the overall goodness of fit of the models ($\text{prob} > \chi^2$) is 0.000. This implies that the explanatory variables in each model of the male and female groups significantly explain international migration from Ghana to Europe. The chi-square test also tested the significant difference between each male and female determinant's coefficients. The test aims to investigate whether at least one of the estimated coefficients in the male model is not equal to the coefficients in the female model. Therefore, identify whether there is a significant difference in the determinants of the male and the female decision to migrate.

For both men and women, we found that the decision to migrate rises with age up to a turning point, after which it decreases. Men were significantly more likely to migrate within the 1980s, 1990s and 2000s than before the 1980s. With women, the odds decreased in the 1980s and then increased in the 1990s and the 2000s. However, the effect was only significant in the 2000s. Moreover, the chi-square test suggests that the effect of age on migration to Europe is significantly different for men and women. However, there is no significant difference for the period.

Childbearing also constrains migration. Women with children below 7 years are significantly less likely to migrate. However, the effect is not significant for women with children between the ages of 6 years to 19 years. The impact of the age of the child is not significant for men. Concerning the number of children, the odds of migration for males and females with two children significantly impact the probability of migrating. Having just one or three or more children does not significantly impact one's migration decision.

Concerning the marital status of the prospective migrant, we find that the odds of migration increase if the men are separated, widowed, in informal union or married than if they have never married before. However, the odds of migration are significant and higher when they are separated or widowed compared to when they are in an informal union or married. On the contrary, women are more likely to migrate if they are separated or widowed than if they have never been in a union.

The effect of the migrant network on the probability of migrating is highly significant and positive for both men and women, however, the effect is higher for females than males. We examine these determinants in detail by exploring the characteristics or composition of the migrant network (type of ties, length of stay and gender of their network). We run three different models, each of which controls for the other determinants already assessed in this study (see Table 5). The effect of each of the migrant network types or characteristics is positive, however, its impact on male and female migration decisions varies. Model 1 disaggregates the network variable by the relationship between the respondent and members of his or her network (the number of close ties, extended ties and friends). We find no significant effect of extended families on the likelihood of migrating, meaning that members of the extended families do not assist in the migration decision. However, friends and close relatives in Europe tend to be helpful in one's migration decision. The effect is highly significant for those who have friends abroad. The migration odds are also higher for those with friends in their network compared to close families. In each case, the odds of migration are higher for women than men. Concerning the length of stay, the decision to migrate depends more on how long members of their migrant network have stayed abroad (see Table 5). Long-term migrants play a critical role in assisting in the migratory decision for both men and women. This is expected as time has given them the chance to accumulate enough financial, social and human capital to provide the needed assistance. Long-term prior migrants play an immense role in assisting females than males. With regards to the recent and experience migrant, their effect on migration is only significant for only females. In Model 3, we test whether gender composition influence migration decision. We find that men's only useful network resources are prior male migrant. On the contrary, female's likelihood of migrating increases significantly with the number of male and female prior migrants in Europe, however, the odd of migrating is more for having female migrant in Europe.

Table 3: Logistic regression of odds of migration to Europe

Variable	Category	
Age	Age (continuous)	1.131** (0.064)
	Age square	0.997*** (0.001)
Gender	Woman	0.958 (0.086)
Migrant network (t-1)	Have current network (No current network as reference)	3.779*** (0.460)
Number of living children	A child (No child as reference)	0.801 (0.144)
	Two children	0.296*** (0.091)
	At least three children	0.607* (0.179)
Age of children (t-1)	7 to 18 years (No child. below 18 years as reference)	0.797 (0.147)
	Below 7 years	0.588 (0.234)
Marital Status (t-1)	Separated/ Widowed (Alone & never in union as reference)	2.296*** (0.527)
	Informal union	1.084 (0.168)
	Married	0.983 (0.159)
Asset holdings (t-1)	At least one Asset (No asset as reference)	1.039 (0.149)
Activity status (t-1)	Economically active (Studying as reference)	1.462** (0.248)
	Unemployed	1.723* (0.499)
	Homemakers	0.156* (0.158)
	Retired	5.642 (6.086)
	Other inactive	1.663 (0.750)
Time period	1980 to 1989 (Before 1980 as reference)	1.323 (0.315)
	1990 to 1999	1.563** (0.329)
	2000 to date	2.504*** (0.508)
Educational Level	Basic Education (No education as reference)	3.350* (2.292)
	Secondary Education	5.102** (3.429)
	Tertiary Education	10.673*** (7.230)
No. of obs. (person-years)		38,741
Prob > chi2		0.000

Note: Exponentiated coefficients or odds ratio (OR); Robust cluster standard errors in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01. The results are also unweighted. Source: Researcher's compilation from MAFE Biographic data.

Table 4: : Effect of the determinants on the Odds of First Migration (Discrete-Time Logistic Model) by gender

Variable	Category	Men (OR)	Women (OR)	sig. diff.
Age	Age (continuous)	1.332** (0.132)	1.019 (0.070)	**
	Age square	0.995*** (0.002)	0.999 (0.001)	
Time period	Before 1980 (ref.)			n.s
	1980 to 1989	2.037** (0.725)	0.829 (0.268)	
	1990 to 1999	2.126** (0.704)	1.204 (0.323)	
	2000 to date	3.025*** (0.994)	2.171*** (0.541)	
Age of children (t-1)	No child. below 18 years (ref.)			n.s
	7 to 18 years	0.974 (0.288)	0.711 (0.168)	
	Below 7 years	1.003 (0.499)	0.272* (0.193)	
No. of children (t-1)	No child (ref.)			n.s
	A child	0.704 (0.196)	0.958 (0.239)	
	Two children	0.372** (0.159)	0.268*** (0.122)	
	At least three children	0.781 (0.335)	0.587 (0.239)	
Marital Status (t-1)	Alone & never in union(ref.)			n.s
	Separated/ Widowed	2.509*** (0.763)	2.084** (0.723)	
	Informal union	1.278 (0.245)	0.884 (0.237)	
	Married	1.000 (0.229)	0.995 (0.224)	
Migrant network (t-1)	No current network (ref.)			***
	Have current network	2.990*** (0.493)	4.935*** (0.907)	
Asset holdings (t-1)	No asset (ref.)			n.s
	At least one Asset	1.352 (0.266)	0.781 (0.160)	
Activity status (t-1)	Studying (ref.)			n.s
	Economically active	1.355 (0.297)	1.633* (0.425)	
	Unemployed	1.218 (0.509)	2.184* (0.892)	
	Homemakers	0.899 (0.896)		
	Retired	17.484** (22.622)		
	Other inactive	1.629 (0.923)	1.797 (1.312)	
Educational Level	No education (ref.)			n.s
	Basic Education	1.870 (1.710)	4.818 (4.759)	
	Secondary Education	2.856 (2.544)	7.103** (6.954)	
	Tertiary Education	5.495* (4.902)	16.380*** (16.182)	
No. of obs. (person-years)		16920	20230	
Prob > chi2		0.000	0.000	

Note: Exponentiated coefficients or odds ratio (OR); Robust cluster standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Chi-square test statistics tests the difference between the coefficients of each variable in each model. The results are also unweighted. Source: Researcher's compilation from MAFE Biographic data.

Asset holdings do not significantly impact migration, however, the activity status of the migrant does have an effect. It is shown that economically active women are more likely to migrate than women studying, and those who are unemployed are also more likely to migrate. However, the odd of migration is high for those who are unemployed. Due to multicollinearity, homemakers and retired were omitted from this model. In the male model, retired men are significantly more likely to migrate than those studying. However, economic active and unemployed men do not significantly impact migration.

The education level is positively related to the migration rate for all levels of education. However, it was only significant for men with tertiary education and women with secondary or tertiary education.

Table 5: Effect of the Composition of Migrant Network on the Odds of First Migration (Discrete-Time Logistic Model)

Variables	Category	Man	Woman
Model 1			
Type of ties in Europe	Number of close relation	1.075* (0.041)	1.183*** (0.043)
	Number of extended relation	1.163 (0.139)	1.110 (0.125)
	Number of friends	1.242*** (0.079)	1.440*** (0.150)
Model 2			
Length of stay in Europe	Number of recent migrants	0.987 (0.105)	1.226** (0.119)
	Number of experienced migrants	1.031 (0.056)	1.177*** (0.066)
	Number of long term migrants	1.160*** (0.045)	1.233*** (0.055)
Model 3			
Gender composition in Europe	Number of men in Europe	1.074 (0.051)	1.187*** (0.050)
	Number of women in Europe	1.122** (0.053)	1.136** (0.071)

Note: Exponentiated coefficients or odds ratio (OR); Robust cluster standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Each model controls for the other determinants of migration. The results are also unweighted. Source: Researcher's compilation from MAFE Biographic data.

4.3. Discussion and conclusion

This study aims to contribute to the discussion of the gendered dimension of international mobility from Ghana to Europe. The analysis of this study goes beyond previous studies in Ghana, which employed a descriptive analysis to examine the push-pull factors of international migration (Anarfi et al. 2000). This study employed a discrete-time event logit model to investigate the impact of the determinants of international mobility for males and females. This study adds to the limited literature on the determinants of international migration in Africa. Though the effect of gender on emigration is not significant, the impact of the individual determinants on male's and female's mobility is found to be significantly different for age and migrant network. These factors play a vital role in migration decision-making. Moreover, the effect of some of the determinants for males is not consistent with females. In some cases, females are less likely to migrate, whereas males are more likely to migrate. In other cases, the impact is high for a particular gender.

Consistent with the literature, the probability of migration increases with age up to a point and then decreases for both men and women (Kanaiaupuni 2000; Richter and Taylor 2008 and Toma and Vause 2014). Men's odds of migrating are higher than women's in their young adult

years. However, women are more likely to migrate at later ages than men. Women nearing their retirement ages may migrate to help their older children and relatives who live elsewhere. Women below 50 years are primarily involved in taking care of their children. For men, the coefficient of age is significantly different from zero, implying that age significantly influences migration. However, the decision to migrate by women is not significantly influenced by age. The findings also resonate well with Ghana's internal migration studies (Awumbila and Ardayfio-Schandorf 2008 & Ackah and Medvedev 2010). The odds of migration are high and significant for men in the 1980s, 1990s and 2000s. With women, the odd decreases in the 1980s and then increases in the 1990s and the 2000s. However, it only remains significant for women in the 2000s. The 2000s was the period which saw a lot of students and professionals migrate out of the country (Anarfi et al. 2000 and Anarfi et al. 2003). The period before the 1980s was the period when a minimal number of people migrated out of the country. Particularly, the period after independence to 1965 (Anarfi et al. 2000). The period from 1980 to 1990, noted as the period of large-scale migration, was when most skilled, unskilled and semi-skilled individuals migrated out of the country. Although, the majority of them migrated to the nearby neighbouring countries such as Ivory Coast and Nigeria. Additionally, available data suggests that women's participation in international migration has recently increased (after 2005) (UN DESA, 2020). These echoes well with the findings of this study.

Having children is found to reduce the likelihood of migrating. The child's age and the number of children may influence migration decisions. It is found that women with children below seven years are significantly less likely to migrate. Nonetheless, the effect did not significantly affect the migration of adult males. Concerning the number of children, the odds of migration reduce as the number of children increases. The odds of migration for males and females with two children confirm that having children significantly reduces the probability of migrating. Having just a child or more than two children did not significantly impact the migration of males and females to Europe.

Gendered migration is influenced by marital status. For men, the odds of migration increase if the individual is separated, widowed, in an informal union or married than if they have never married before. However, the odds of migration are significant and higher when they are separated or widowed than when they are in an informal union or married. For women who are in any form of formal or informal union, the effect was not significant. Women are more likely to migrate if they are separated or widowed than if they have never been in a union. It makes intuitive sense for the migrant to reduce the propensity to migrate as being in any form of a union comes with extra responsibility of mutually taking care of the house and the children.

Having social networks in the destination country can instigate an individual to migrate as they bridge the information gap between the prospective migrants and the labour market experience in the destination and offer assistance in employment and accommodation (e.g. Pedraza 1991 and T-Sotelo 1994). The effect of the migrant network on the probability of migrating is highly significant and positive for both men and women. However, the effect is higher for females than males confirming several studies in Mexico and Thailand (see, Kanaiaupuni 2000; Curran and Rivero-Fuentes 2003; Curran et al. 2005). We also found that different mechanisms of the migrant social network play a role in determining male and female mobility. For women, the most influential form of the migrant social network is close relations, friends, male and female migrants in Europe, recent and established networks in Europe. Migrant social networks and their various characteristics are valuable sources of assistance to females in many cases. For instance, in a patriarchal setting where the migration of females is discouraged, these network resources provide a valuable source of assistance to female migration. We also found a bigger odds for males and females with friends abroad than those with close relatives. Most of these friends might be would-be partners of the migrants or friends who are assisting the migrants with their higher education. The effect of a long-term migrant on the probability of migration for males and females is expected because they are generally established and might have gained enough experience and knowledge about the destination country to assist the migrants. The significant effect of recent and experienced migrants on female mobility may be attributed to male spouses in Europe who provide the needed information for their migration. Concerning the gender composition of the network, male migrants in Europe are more likely to offer assistance to females than female migrants in Europe, partly because most migrants in Europe are males (UN DESA, 2020). They might have been established

compared to females. Female migrants in Europe offer assistance to both males and females. However, the migration odds are bigger for females than for males.

The effect of owning an asset on migration for men and women is not significant, however, its effect on migration is substantial. The effect on men is positive, whereas the effect on women is negative. Most individuals who have migrated from Ghana move because of the unfavourable economic conditions in Ghana compared to the destination countries' economic conditions. There were instances during the Ghanaian migration history (the 1990s and the early 2000s) where a large number of the educated professional or skilled workers had to leave for other countries in search of a better standard of living (Anarfi et al., 2000; Black et al., 2003; Anarfi et al., 2003). Emigration slowed down in the 2000s mainly due to an improvement in democratic governance with a smooth power transition and an economic improvement (see Amoah et al., 2021).

Economically active women are more likely to migrate than women studying, and those who are unemployed are also more likely to migrate. However, the odds of migration are high for those who are unemployed. This suggests that it is not only the jobless individual who is willing to migrate in search of better living conditions. Those who are economically active are not motivated to stay. This justifies why from the 1980s to the early 2000s, many qualified professional and skilled individuals moved to other neighbouring African countries, Europe and North America (see Amoah et al., 2021). During these periods, female migration increased proportionally (UN DESA, 2020). Homemakers and the retired were omitted from this model due to multicollinearity. In the male model, retired men are significantly more likely to migrate than those studying. Although the effect of economic active and unemployed men on migration was not significant, it cannot be overlooked. Descriptive analysis by Anarfi et al. (2000) has shown that the unemployed and economically active men stimulate migration as most male migrants were either unemployed or employed. However, they found that most migrants had a job before out-migration from Ghana. Between migrant men and non-migrant men, they found unemployment to be high among migrant men before they migrated than among non-migrant men. They also found that migrant and non-migrant women tend to be economically active prior to migration and the survey, respectively, than men. This resonates well with our finding on the effect of being economically active on women's migration decisions. Also consistent with this study, Anarfi et al. (2000) and Anarfi et al. (2003) suggested that migrants who travel out of the country are primarily students and professionals who mostly travel to the UK due to the colonial ties.

The level of education, as consistent with the literature (see, Kanaiaupuni 2000; Feliciano 2008 and Toma and Vause 2014), is positively associated with migration to Europe. However, the results only revealed a significant relationship between men at the tertiary level and women at the secondary and the tertiary level. This suggests that both men and women with some level of education will be more likely to migrate for a better outcome, such as better employment and higher income. The odds are higher for the women than the men, and at the tertiary level, the odds become much higher. However, Anarfi et al. (2000) found that most migrants had primary education prior to their migration. It is followed by those with secondary education. Very few migrants are with tertiary education prior to their migration. Concerning the significant difference in the effect of education on the probability of migrating, the chi-square test proved that there is no significant difference.

Essentially, this study provides insight into the determinants of international migration and how the determinant differ for men and women. For policy purposes, policymakers should consider providing an enabling environment to encourage investors to operate as the situation in the Ghanaian economy offers a few opportunities for the growing population. This will ensure a sound economic environment, ensuring job availability for the youth and the highly educated individuals who are more likely to migrate.

Concerning the limited study on the gender dimension of out-migration, more comprehensive research is needed to understand other contributing factors such as the effect of remittances, migration policies, racism, among others, to help bridge the gender gap in international migration from Ghana. Incorporating relevant questions such as migrant network and its characteristics, migrations policies, among others, in recent national surveys will aid researchers in understanding the current dynamics in migration (internal and international), which will be useful for policy

purposes. The findings of this study will also assist policymakers in making important migration decisions, as well as government stakeholders involved in data collection on individual and household demography and well-being.

References

1. Ackah, C., & Medvedev, D. (2010). Internal migration in Ghana: Determinants and welfare impacts. The World Bank.
2. Allen, J. U. D. I. T. H. (2015). Comparative Study of Private and Public Student Nurses' Intentions to Emigrate From Ghana (Doctoral dissertation, University Of Ghana,).
3. Allison, P. D. (1982). Discrete-time methods for the analysis of event histories. *Sociological Methodology*, 13, 61-98.
4. Amoah, A., Tetteh, C., Korle, K., & Quartey, S. H. (2021). Human Development and Net Migration: the Ghanaian Experience. *Journal of International Migration and Integration*, 1-26.
5. Anarfi, J. K. (1982). International Labour Migration in West Africa: A Case Study of the Ghanaian Migrants in Lagos, Nigeria. Accra: Regional Institute for Population Studies; Legon: University of Ghana.
6. Anarfi, J. K., Awusabo-Asare, K. and Nsowah-Nuamah N.N.N. (2000). Push and Pull Factors of International Migration. Country report.
7. Anarfi, J., Kwankye, S., Ababio, O. M., & Tiemoko, R. (2003). Migration from and to Ghana: A background paper. University of Sussex: DRC on Migration, Globalisation and Poverty.
8. Awumbila, M., & Ardayfio-Schandorf, E. (2008). Gendered poverty, migration and livelihood strategies of female porters in Accra, Ghana. *Norsk Geografisk Tidsskrift-Norwegian Journal of Geography*, 62(3), 171-179.
9. Bilecen, B., Gamper, M., & Lubbers, M. J. (2018). The missing link: Social network analysis in migration and transnationalism. *Social Networks*, 53, 1-3
10. Black, R., King, R., & Tiemoko, R. (2003). Migration, return and small enterprise development in Ghana: A Route out of poverty? Sussex migration working paper, 9.
11. Boakye-Yiadom, L. (2008). Rural-Urban Linkages and Welfare: The Case of Ghana's Migration and Remittance Flows. Thesis submitted for the degree of Doctor of Philosophy University of Bath: Bath.
12. Borjas, G. J. (1991). Immigration and self-selection“In: JM Abowd, RB Freeman,(Eds.), Immigration, Trade and the Labor Market: A NBER Project Report.
13. Clemens, M. A., & Pettersson, G. (2006). A new database on health professional emigration from Africa. Center for Global Development Working Paper(95).
14. Curran, S. R., & Rivero-Fuentes, E. (2003). Engendering migrant networks: The case of Mexican migration. *Demography*, 40(2), 289-307.
15. Curran, S. R., & Saguy, A. C. (2001). Migration and cultural change: a role for gender and social networks?. *Journal of International Women's Studies*, 2(3), 54-77.
16. Curran, S. R., Garip, F., Chung, C. Y., & Tangchonlatip, K. (2005). Gendered migrant social capital: Evidence from Thailand. *Social Forces*, 84(1), 225-255.
17. Davis, B., Stecklov, G., and Winters, P. (2002). Domestic and international migration from rural Mexico: Disaggregating the effects of network structure and composition. *Population Studies* 56(3): 291-309.

18. Donato, K. M. (2010). US migration from Latin America: Gendered patterns and shifts. *The Annals of the American Academy of Political and Social Science*, 630(1), 78-92.
19. Dustmann, C., Schönberg, U., & Stuhler, J. (2016). The impact of immigration: Why do studies reach such different results? *Journal of Economic Perspectives*, 30(4), 31-56.
20. Elnajjar, H. (1993). Planned emigration: the Palestinian case. *International Migration Review*, 27(1), 34-50.
21. Feliciano, C. (2008). Gender Selectivity: U.S. Mexican Immigrants and Mexican Non-Migrants, 1961-2000. *Latin American Research Review*, 43(1), 139 – 160.
22. Fussell, E. and Massey, D.S. (2004). The limits to cumulative causation: International migration from Mexican urban areas. *Demography* 41(1): 151-171. doi:10.1353/dem.2004.0003.
23. Hoddinott, J. (1994). A model of migration and remittances applied to Western Kenya. *Oxford Economic Papers*, 459-476.
24. Hondagneu-Sotelo, P. (1994). *Gendered Transitions: Mexican Experiences of Immigration*. Berkeley, CA, University of California Press.
25. International Organization for Migration (IOM) (2009) *Migration in Ghana: A Country Profile 2009*. Geneva. Available at <https://publications.iom.int>
26. International Organization of Migration (2020). *World Migration Report 2020*.
27. IOM (2020). *Migration in Ghana: A country profile 2019*. Available at <https://publications.iom.int>
28. Kanaiaupuni, S. (1995). *The role of women in migration: household organisational strategies of Mexican families*. University of Chicago.
29. Kanaiaupuni, S. (1998). *Invisible hands: Structural implications of women's activities in the Mexican migration process*. American Sociological Association, San Francisco, CA Aug, 21-24.
30. Kanaiaupuni, S. M. (2000). Reframing the migration question: An analysis of men, women, and gender in Mexico. *Social Forces*, 78(4), 1311-1347.
31. Katz, E. (2000). *Individual, Household and Community-level Determinants of Migration in Ecuador: Are there Gender Differences?* A Paper Prepared for the Annual Meeting of the Population Association of America Los Angeles, CA.
32. Kuhn S. R. (2005) *The Determinants of Family & Individual Migration: A Case-Study of Rural Bangladesh*. University of Colorado.
33. Massey, D.S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A. and Taylor, J.E., (1993). Theories of international migration: A review and appraisal. In: *Population and Development Review*, 19(3), pp. 431-466.
34. Massey, D.S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A. and Taylor, J.E., (1998). *Worlds in motion: Understanding international migration at the end of the millennium*, Oxford: Clarendon Press.
35. Odotei, I. K. (2002). *Sea Power, Money Power: Ghanaian Migrant Fisherman and Women in the Republic of Benin*.
36. Pedraza, S. (1991). Women and Migration: The Social Consequences of Gender. *Annual Review of Sociology*, 17, 303-332.
37. Pillinger, J. (2011). *Quality healthcare and workers on the move: International migration and women health and social workers programme*. Report. Public Services International, Ferney-Voltaire, France.

38. Reed, H. E., Andrzejewski, C. S. and White, M. J. (2010). Men's and Women's Migration in Coastal Ghana: An Event History Analysis. *Demographic Research: Research*: 22(25), 771-812.
39. Richter, S., & Taylor, J. E. (2008). Gender and the determinants of international migration from rural Mexico over time. Morrison, AR, Schiff, M. & Sjöblom, M.(2008). *The International Migration of Women*. Washington, DC.: A co-publication of the World Bank and Palgrave Macmillan.
40. Rimmer, D. (1993) *Staying Poor: Ghana's Political Economy 1950-1990*, Pergamon, Oxford.
41. Shanthi K. (2006), *Female Labour Migration in India: Insights from NSSO Data*; Working Paper 4/2006, Madras School of Economics.
42. Sudarkasa, N. (1977). Women and migration in contemporary West Africa. *Signs: Journal of Women in Culture and Society*, 3(1), 178-189.
43. Toma, S. and Vause, S. (2014). Gender Differences in the Role of Migrant Networks: Comparing Congolese and Senegalese migration flows. *IMR* 48(4): 972-997.
44. Twum-Baah, K. A. (2005). Volume and characteristics of international Ghanaian migration. *At home in the world*, 55-77.
45. United Nations (1998). Recommendations on statistics of international migration, Statistical papers series M, No. 58, Rev. 1, Statistics Division, Department of Economic and Social Affairs, New York: United Nations.
46. United Nations, Department of Economic and Social Affairs, Population Division (2020). *International Migrant Stock 2020*. (United Nations database, POP/DB/MIG/Stock/Rev.2020).
47. US Census Bureau. (2000). *Census 2000 Special Tabulation (STP-159)*, Table 1-3 Profile of Selected Demographic and Social Characteristics. Washington, D.C: Ghana.
48. Van Hear, N. (1998). *New Diasporas: The Mass Exodus, Dispersal and Regrouping of Migrant Communities*. London: UCL Press.

Appendix

DIAGNOSTIC TESTS FOR THE LOGISTIC REGRESSION ANALYSIS

- a) Test for individual effect or unobserved heterogeneity
 - i) Likelihood (LR) test for rho (unobserved heterogeneity) for the pooled model LR test of rho=0: $\text{chibar2}(01) = 1.2\text{e-}04$ Prob \geq $\text{chibar2} = 0.496$
 - ii) Likelihood (LR) test for rho (unobserved heterogeneity) for the male model LR test of rho=0: $\text{chibar2}(01) = 6.6\text{e-}05$ Prob \geq $\text{chibar2} = 0.497$
 - iii) Likelihood (LR) test for rho (unobserved heterogeneity) for the female model LR test of rho=0: $\text{chibar2}(01) = 6.6\text{e-}05$ Prob \geq $\text{chibar2} = 0.497$