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Masculinization of Old Age in Countries Across Asia

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Abstract

This paper shows that the universal female survival advantage evades several countries across Asia. Consequently, contrary to the global trend, these countries exhibit more elderly (60+,75+) men than elderly women in their populations. While substantial academic research has attempted to explain the persistence and geographical distribution of a female deficit (i.e. missing women) at young ages, an examination of this phenomenon in old age (i.e. 60+) is deficient. Using data from the United Nations, this paper is the first systematic attempt at evaluating the female deficit in the total and elderly populations in all regions and countries across Asia, both with the inclusion and exclusion of immigrants. This exercise reveals gross female deficits in the total and/or elderly populations of countries and regions neglected by literature (e.g. Bhutan in South Asia, Tajikistan in Central Asia and the Middle Eastern region of Western Asia) and emphasizes the importance of redirecting the focus of missing women literature towards the elderly age group to not only uncover a lifetime of causal mechanisms behind the female deficits but also identify possible cohort effects that may be precipitating the phenomenon.

Introduction

In 1990 Amartya Sen introduced the term missing women to refer to the number of women who should be alive at a given point of observation but are not and estimated a figure of 100 million missing women in Asia and Africa, predominantly Asia (Sen 1990, 1992). The most recent calculations place this estimate at approximately 125.6 million (Bongaarts & Guilmoto 2015). This gross female deficit may be the result of two groups of effects: the accumulation of disadvantages at each stage of the female life course (e.g. sex selective abortion before/at birth, neglected health during childhood, honor killings during young adulthood, lack of preventive care during adulthood and accusations of witchcraft in old age) and/or the gendered impact of demographic shocks (i.e. conflicts and natural disasters) that have the potential to elevate female vis-à-vis male mortality (Ezdi 2017). Given the magnitude of this phenomenon, substantial research has focused on the numbers, causes, consequences and policy implications of this phenomenon. This research however displays an age specificity in missing women literature: the majority of existing literature on missing women evaluates the phenomenon at younger life stages (before/at birth and childhood, especially the former) while ignoring the effect of disadvantages at later life stages. It is important to assess whether a geographical specificity also persists in missing women literature. Asia provides a fertile starting ground for this analysis for two reasons: First, although Sen (1990) and subsequent authors (e.g. Klasen & Wink 2003, Guilmoto 2009) identify the missing women phenomenon to persist in Asia and Africa, they find the bulk of the phenomenon to be concentrated in Asia. Second, the population in most countries of Asia is ageing very rapidly (especially when compared with the majority of countries in Africa, which remains the youngest continent of all; Bloom et al. 2003) so the persistence of a female deficit in older age categories of Asia requires immediate investigation.

The stark inter and intra regional demographic heterogeneity inherent on the Asian continent adds further complexity to the analysis (Bloom et al. 2003). East Asia represents the oldest society on the continent and is best prepared to cater to its rapidly ageing population (Menon & Melandez 2009). Southeast Asia is not far behind with the majority of countries having nearly exhausted their demographic dividend and their baby boom generation being at the brink of entering old age (Bloom, et al. 2003). South Asia, due to higher initial fertility and delayed

fertility and mortality decline, has a relatively younger population than the former two regions giving it a time lag before entering old age (Bloom et al. 2003, Mujahid & Siddhisena 2009). However, this time lag is fast eroding and consequently pushing the region into the elderly category in the decades to come (Mujahid & Siddhisena 2009). The post-Soviet states of Central and Western Asia present two distinct trends: The Central Asian states are ageing at rates equivalent to the Southeast Asian countries while the post-Soviet States of Western Asia are ageing more rapidly, equivalent to that of many Eastern European countries (Sidorenko 2016). Finally, the Middle Eastern region of Western Asia is the youngest on the continent as a result of which it not only experiences the youth bulge as in South Asia but also echo bulges (youth bulges followed by youth bulges) and faces the daunting challenge of productively employing its working age population to reap the benefits of the demographic dividend for its aged population in the future (Saxena 2008). These inter regional differences are further augmented by the diversities created by the individual countries forming these regions (Hayutin 2009).

Table 1 may be used to elucidate the link between missing women and ageing in Asia. Using data from the United Nations Department of Economic and Social Affairs (UNDESA), the table provides sex ratios (male/female) of the elderly population (60+ and 75+) at the world level and in different regions and countries across Asia. It is evident that at the world level the number of elderly women exceeds the number of elderly men in the 60+ population and this excess of women increases as the population ages. At a first glance it appears that, with the exception of Bhutan and Qatar, this general trend prevails in all regions and countries displayed in the table as the sex ratio therein is less than 1, implying a female survival advantage. However, a closer look will reveal that all countries that have sex ratios higher than the world average actually display a female deficit in the elderly population (with respect to the world average) with this deficit being even worse for countries displaying a ratio higher than 1. This female deficit in the elderly population may be termed the elderly missing women phenomenon. A brief glimpse into these sex ratios sheds light on two further aspects: First, some countries (e.g. Bhutan) that are rarely mentioned in missing women literature present a large female deficit in the 60+ population which worsens with age. Second, as evinced by the lower regional versus country sex ratios, there is substantial heterogeneity with regard to the elderly missing women phenomenon amongst the countries of Asia so that a higher female

deficit in some countries is counterbalanced by lower female deficit in other countries resulting in lower regional sex ratios.

Table 1. Sex ratios (male/female) for regions and countries in 2015

Region/Country	60+	75+
World	0.86	0.70
East/Southeast Asia	0.90	0.74
China	0.96	0.83
South Asia	0.96	0.88
Bhutan	1.16	1.30
Central Asia	0.70	0.57
Tajikistan	0.96	0.91
West Asia	0.84	0.70
Qatar	2.33	2.00

The masculinization of old age evident in Table 1 calls for a thorough evaluation for the possible persistence of a female deficit in old age (60+) in countries across Asia. The ensuing discussion first provides an overview of the masculinization patterns already covered by missing women literature then a description of the data and methodology employed in the paper followed by an examination of the extent of the female deficit in countries across Asia and finally a discussion to summarize the implications of the female deficit and possible remedial measures.

Country specific patterns in literature

Missing women in the total population

Sen (1990, 1992), Coale (1991) and Klasen (1994) identified the missing women phenomenon in the total population (i.e. all age categories) to persist in roughly the same countries/regions: China, some countries of South Asia (India, Pakistan and Bangladesh) and at the regional level, in West Asia and North Africa. Klasen and Wink (2002, 2003) added a few countries to this list: Iran, Afghanistan, Taiwan, South Korea, Algeria and Tunisia. Thereafter, Guilmoto (2012) estimated that the missing women phenomenon in the total population in 2010 persisted in: Afghanistan, Albania, Armenia, Azerbaijan, Bangladesh, China, Hong Kong, Georgia, India, Montenegro, Nepal, Pakistan, South Korea, Singapore and Vietnam. Finally, Bongaarts and Guilmoto (2015) when estimating the total number of missing women in the population from 1970 to 2010 and in their projections from 2010 to 2050 included China, India, Pakistan, Bangladesh, Nigeria, Indonesia, Sub-Saharan Africa and a rest of the world category in their calculations.

Two things are to be noted from the academic literature on missing women in the total population. First, many Asian countries are excluded from the analysis of missing women, e.g. Thailand, Bhutan, several countries of Western Asia. Second, existing studies that attempt to estimate missing women in the total population do not take account of the effect of immigration. Coale (1991) highlights that migration is one of the four ways in which the sex ratios of a population can be affected with the effect depending on the age structure and gender composition of the migrant population. It may therefore be useful to assess the impact of migration on the (elderly) missing women phenomenon.

Missing women in specific age groups

The most frequently discussed age category in missing women literature is the before/at birth category followed by the childhood category with some later age categories only recently being

emphasized. Guilmoto (2009) provides an exhaustive list of countries that are analyzed in the before/at birth category: Albania, Armenia, Azerbaijan, Bangladesh, China, Georgia, India, Nepal, Pakistan, Singapore, South Korea, Taiwan, Nepal and Vietnam. By far, the most frequently discussed countries are China and India in terms of the effect of fertility decline and sex selection technology (e.g. Das Gupta & Shuzhuo 1999), the role of birth parity and gender composition effects (e.g. Bannister 2004 in the case of China & Das Gupta and Mari Bhatt 1997 in the case of India), possible regional variations (e.g. Hull 1990 for China and Mari Bhat & Zavier 2007 for India), elevated sex ratios at birth amongst Indian and Chinese migrant communities (e.g. Dubuc & Coleman 2007) and future projections (e.g. Attané 2006 for China). Another country that is frequently discussed, though to a lesser extent is South Korea. Although some of the same features as China and India are also highlighted in South Korea (e.g. the same literature highlights the effects of sex selection technology and fertility decline and Park and Cho 1995 evaluate the role of the birth parity and gender composition effects), the country is notable for its role in reversing the missing women phenomenon at birth and literature either directly highlights the exemplary role of South Korean government in managing the missing women problem at birth (e.g. Kim 2004) or indirectly discusses the applicability of South Korean solutions in the context of China or India (e.g. Chung & Das Gupta 2007). Pakistan and Bangladesh are less frequently examined at the time of birth and when discussed are attributed as having relatively normal sex ratios at birth due to higher fertility and lower practice of sex selective abortion (e.g. Bongaarts & Guilmoto 2015). In the case of the former, the sex selection behavior of Pakistani immigrants is often compared to that of Indian immigrants (e.g. Adamou et al. 2013). The four post-Soviet countries, Albania, Armenia, Georgia and Azerbaijan, were introduced to missing women literature by Guilmoto (2009) and have benefitted from some research on rising sex ratios at birth since then. Most research focuses on the correlation between the breakup of the Soviet Union and sex selective abortions at higher birth orders (e.g. Duthé et al. 2012) and this effect being limited to a few countries of the Soviet bloc despite similarities in sociocultural patterns across post-Soviet States (e.g. Michael et al. 2013). Vietnam is another country that has been identified by Guilmoto (2009) as exhibiting rising sex ratios at birth. The literature herein emphasizes how, despite the comparatively recent rise in sex ratios at birth, the sex ratio trajectory in Vietnam is expected to follow the same U-shaped pattern as that in other countries that experienced a relatively earlier rise in sex ratios at birth (e.g. Guilmoto 2012). Literature on the missing

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women phenomenon at birth for the remaining countries in Guilmoto's (2009) paper is not very detailed but may be referred to occasionally as in for example by Lin and Luoh (2008) to test the hypothesis on the link between parental carriers of the Hepatitis B virus and the missing women phenomenon.

In the childhood category the main focus of the literature is on the neglect of girls in health and nutrition and in this regard three countries feature prominently – Bangladesh, India and Pakistan. Even before the introduction of the term missing women, the neglect of girls in these countries was highlighted (e.g. Chen et al. 1981 for Bangladesh and Das Gupta 1987 for India). In the post 1990 era India predominates the literature on missing girls (e.g. Kulkarni 2007). In India studies also compare the effect of religion and fertility on missing women in early childhood (e.g. Iyer & Joshi 2013). Of course substantial research also evaluates the existence of missing girls in China (e.g. Qian 2008) and the impact of resource constraints on girls (e.g. Jiang et al. 2005). The trend departs from discussing these traditional countries when talking about the tradeoff effect i.e. the extent to which sex selection at birth has counterbalanced discrimination against young girls (e.g. Goodkind 1996, Lin et al. 2014) when data is used from different countries (China, South Korea, Malaysia and Taiwan) to evaluate the validity of the argument.

In the young adulthood and adulthood categories there are two papers that directly address the existence of the missing women phenomenon. The first paper addresses it in the context of India only (i.e. Milazzo 2014). The second paper examines the existence of adult missing women (20-64) due to not being married in China, India, Southeast Asia, South Asia, West Asia and Africa (i.e. Anderson & Ray 2015). Furthermore, over the past decade there has been a growing body of literature that evaluates the consequences of missing women phenomenon for marriage markets in countries like China and India and how the deficit of brides can be filled by importing from countries with similar cultural ties, especially in the context of China (e.g. Hudson & Den Boer 2002, Ebenstein & Sharygin 2009).

Finally, there are three papers that examine the missing women phenomenon in the elderly category. The first paper disaggregates the missing women phenomenon by age and disease

for China, India and Sub-Saharan Africa and finds that a substantial proportion of missing women in the former two countries are concentrated in the elderly age group (Anderson & Ray 2010). The second paper concentrates on the age distribution of missing women across different states in India and finds evidence of elderly missing women therein (Anderson & Ray 2012). The third paper by Bongaarts and Guilmoto (2015) calculates the total number of missing women worldwide for each age category and finds that missing women exist in the elderly category as well but focuses its discussion mainly on how the missing women trend of China and India has developed in the past and how it will develop in the future, alongside the rest of the world.

The discussion on literature by age group makes it clear that not only is there an overabundance of research on missing women at the time of birth but also budding research on the effects of a female birth deficit at some later stages of life. This is especially true for China and India. For example, at the childhood stage some authors examine whether higher prenatal sex selection may increase female chances of survival during childhood. This trend is especially apparent in young adulthood when young men born in cohorts in China and India when prenatal sex selection was practiced widely are currently facing difficulties finding wives and hence have abundant research and media attention oriented their way. This may reflect the tendency of literature to focus on the deficit of women at the stage when the problem is most apparent in society. The relative neglect of the elderly missing women phenomenon may therefore be the result of ageing being a relatively recent phenomenon in Asia (i.e. restricted to a few countries) and the fact that many countries that are affected by the missing women phenomenon perhaps are not prepared for an ageing population (Chalise & Brightman 2006, Jejeebhoy & Sathar 2001) and least of all envisage the consequences of a female deficit in the population. For example, substantial literature in India discusses the problems that the feminization of ageing in the country would present (Venkatesh & Vanishree 2014).

Data and methods

Data from UNDESA is used to estimate the existence and magnitude of the missing women phenomenon across countries in Asia in the 60+ and 75+ age categories for the year 2015 both

including and excluding the immigrant stock. The population estimates provided by UNDESA are based on the de facto population in a given country (UNDESA 2014). The de facto population can be defined as: a concept under which individuals (or vital events) are recorded (or are attributed) to the geographical area where they are present (or occurred) at a specified time (OECD 2006). Therefore, estimates of net migration (immigrants – emigrants) need to be subtracted from the population estimates to obtain an accurate demographic profile of the nationals of any given country. Such an exercise would require flow data by gender and age on all countries considered in this paper. Although flow estimates for the population as a whole may be available for most Asian countries, these estimates are not disaggregated by gender and age and therefore cannot be used for the calculation of sex ratios by age. The best alternative, especially for many Asian countries, is the gender and age distribution of the international immigrant stock provided by the UNDESA (Fargues 2006, Cainkar 2013). The United Nations defines the international immigrant stock as "the number of people born in a country other than that in which they live, including refugees" (United Nations Economic and Social Council 2010). Therefore, the UNDESA data on immigrant stock is used to analyze sex ratios with the exclusion of immigrants. Unfortunately, neither the United Nations nor any other source provides data on emigration disaggregated by both gender and age, therefore the analysis will be limited to the exclusion of immigrants only, an issue that will be turned to later.

The primary methodological consideration in calculating the number of missing women in any age group is the identification of the hypothetical number of women that should be alive in the given age group in the absence of missing women. This requires the identification of an ideal sex ratio (men/women) that would prevail in the absence of missing women. In this paper the ideal sex ratio is assumed to be the sex ratio prevailing at the world level i.e. the sex ratios in the 60+ and 75+ populations in each country must be less than or equal to the world sex ratios. Any sex ratios higher than the world sex ratios would indicate a female deficit and hence the presence of missing women in the respective populations of the given country.

The analysis within Asia is conducted both at the regional and at the country level. There are two reasons for the former. First, as discussed in the beginning of the paper, existing discussion of the missing women phenomenon identifies its existence in specific geographic regions –

predominantly East/Southeast Asia and South Asia. Therefore, to assess whether there is a regional gap in terms of missing women and elderly missing women literature, such an analysis would be necessary. Second, the introduction of the paper also discusses the inter regional variations in ageing across Asia. An analysis of these variations in the context of missing women would require a regional grouping of countries. The regional classification of countries used in this chapter is the one provided by the United Nations and listed in table 2. As it can be seen two additional classifications are used for the countries in Western Asia namely, dividing them between countries that form part of the Middle East and countries that are members of the Gulf Cooperation Council (GCC). Information for the classification of countries as Middle Eastern and as GCC is obtained via the World Bank (2017a, 2017b). The GCC consists of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (World Bank 2017a). These oil rich Arab states are peculiar because as opposed to the majority of countries in the Arab region that are both senders and recipients of labor migrants, they stand out for being recipients of labor migrants only (Fargues 2006, Cainkar 2013, Kronofol 2013). That fact that Saudi Arabia, Qatar, UAE and Kuwait are four countries that form the largest sources of international remittances worldwide (Kronofol 2013) is indicative of the heavy inflow of immigration. Hence, these countries are analyzed separately as it is expected that the immigration patterns therein would have strong implications on the missing women phenomenon (Klasen & Wink 2003).

For the first analysis, the elderly missing women phenomenon is assessed first at the regional level, then at the country level (by region). To this end, sex ratios of each country are subtracted from world sex ratios for the specific age category and the total population (the latter for comparative purposes, discussed in detail in the results section). A negative number indicates an elderly missing women phenomenon in the given age category and country (as the ratio of men/women of that country is higher than the ratio of men/women for the world) and a zero or positive number indicates no elderly missing women phenomenon in the given age group and country, compared to the world average. This analysis is conducted including and excluding the immigrant stock for each country.

Table 2. Classification* of countries in Asia

South Asia	Southeast Asia
Afghanistan	Brunei Darussalam
Bangladesh	Cambodia
Bhutan	Indonesia
India	Laos
Iran (Middle East)	Malaysia
Maldives	Philippines
Nepal	Singapore
	Thailand
	Timor-Leste
	Vietnam

East Asia	Central Asia
China	Kazakhstan (post-Soviet)
Hong Kong	Kyrgyzstan (post-Soviet)
Macao	Tajikistan (post-Soviet)
Japan	Turkmenistan (post-Soviet)
Mongolia	Uzbekistan (post-Soviet)
North Korea	
South Korea	

Western Asia	
Armenia (post-Soviet)	Bahrain (GCC, Middle East)
Azerbaijan (post-Soviet)	Kuwait (GCC, Middle East)
Cyprus	Oman (GCC, Middle East)
Georgia (post-Soviet)	Qatar (GCC, Middle East)
Iraq (Middle East)	Saudi Arabia (GCC, Middle East)
Israel (Middle East)	United Arab Emirates (GCC, Middle East)
Jordan (Middle East)	
Lebanon (Middle East)	
Palestine (Middle East)	
Syria (Middle East)	
Turkey	
Yemen (Middle East)	

* Regional classification of countries according to the UNDESA (2015); Post-Soviet classification of countries according to Chawla et al. (2007); Middle- Eastern and GCC classifications according to the World Bank (2017b, 2017a).

Results

Figures 1 to figure 7[i] depict the female deficit in the regions and countries of Asia. Figure 1 provides a regional perspective of the female deficit. The figure makes apparent that when compared to the world average, the continent as a whole and three regions therein – East Asia, South Asia and the GCC region of Western Asia – depict a female deficit in the total and elderly populations (both age categories). In the former two regions, the deficit appears to worsen in the elderly categories which may indicate a worsening of female survival chances as the population ages. Of course this cannot be confirmed without examining the situation of individual countries (as the results may be driven by a single country or a set of countries). It is further evident that in all three age categories the deficit is worst for the GCC countries of Western Asia, followed by South Asia and then East Asia.

Figure 1. Missing women by region, 2015
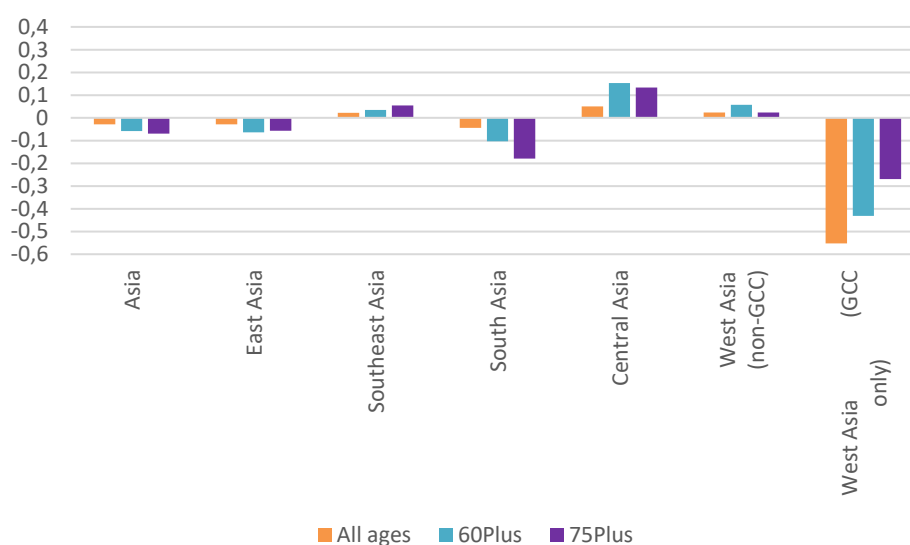
Figures 2 to figure 7 depict the situation of individual countries within the regions of Asia. It is apparent that amongst the three countries in East Asia that present a female deficit in the elderly population, China and Hong Kong present it for both elderly categories while Macao does so for the 60+ category only. Amongst the seven countries in Southeast Asia that present

the same deficit, Malaysia and Timor-Leste appear to exhibit the phenomenon in both elderly categories while Brunei Darussalam, Indonesia, Singapore, Thailand and Laos present it in one elderly category only (60+ for the latter three countries and 75+ for the former countries). Malaysia has the highest female deficit in the region for both elderly categories. In South Asia, all countries except Sri Lanka present the elderly missing women phenomenon and do so in both the 60+ and 75+ age categories. In Central Asia, Tajikistan is the only country that presents an elderly missing women phenomenon and does so for both elderly categories. Amongst the non-GCC countries of Western Asia, Cyprus, Jordan, Lebanon Palestine, Syria and Yemen present an elderly missing women phenomenon in both elderly categories while Iraq presents it in the 75+ category only. Finally, all the GCC countries of Western Asia exhibit high female deficits in both elderly categories with the United Arab Emirates presenting the highest female deficit in Asia in the 60+ category and Qatar doing so in the 75+ category with both countries being outliers in the extent of their respective deficits. At a first glance, some Asian countries like North Korea (in East Asia), Vietnam (in Southeast Asia) and Kazakhstan (in Central Asia) appear to be outliers in the opposite direction indicating a problem of missing men. However, this is purely a result of using the world as a reference point. If instead, the industrialized countries of Western Europe had been used, perhaps even the countries currently close to and above the origin would present an elderly missing women phenomenon. However, the inadequacy of applying the demographic conditions of the developed nations of the West to evaluate the missing women phenomenon in Asia has already been discussed by several authors (e.g. Coale 1991, Klasen 1994).

A comparison of the female deficit in the elderly age categories of given countries with the female deficit or surplus in the total population of these countries may provide hints on whether the elderly missing women phenomenon therein may be the result of a cohort effect, i.e. whether elderly missing women are present in specific birth cohorts due to special demographic circumstances (e.g. war and natural disasters) experienced by these cohorts. Such an interpretation may be plausible if the deficit in the elderly population is not accompanied by a deficit in the total population. Of course without historical, cohort specific data it is impossible to completely rule out the existence of age specific discrimination in these countries (as would be, just for the sake of an example, deaths resulting from accusations of witchcraft as such

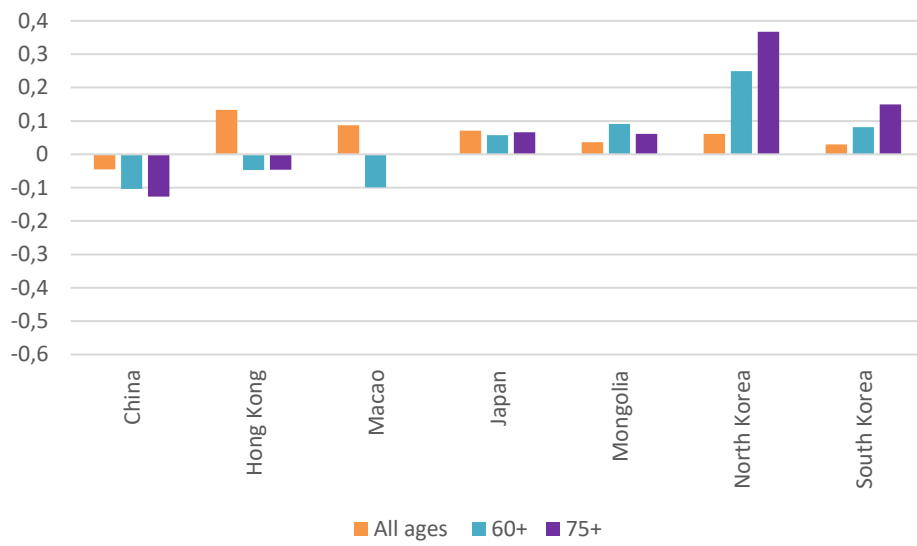Figure 2. Missing women in East Asia, 2015
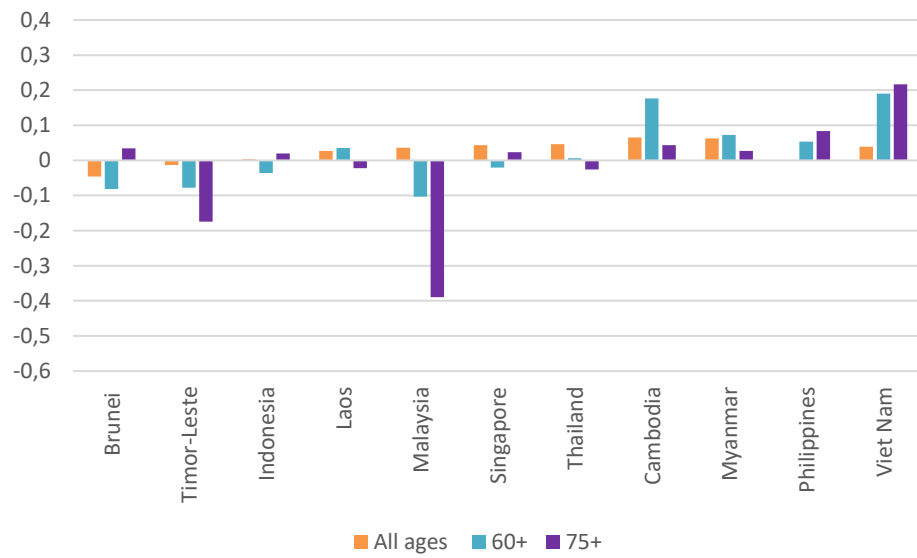

Figure 3. Missing women in Southeast Asia, 2015

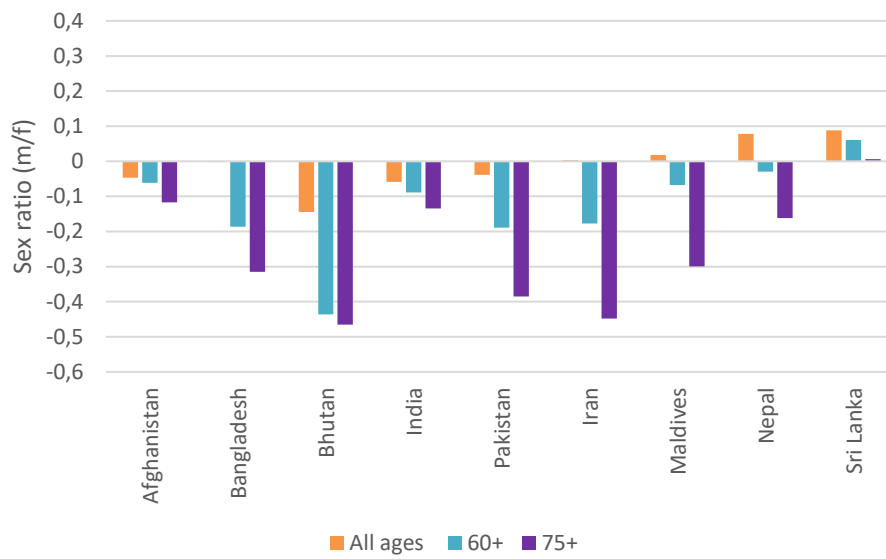Figure 4. Missing women in South Asia, 2015

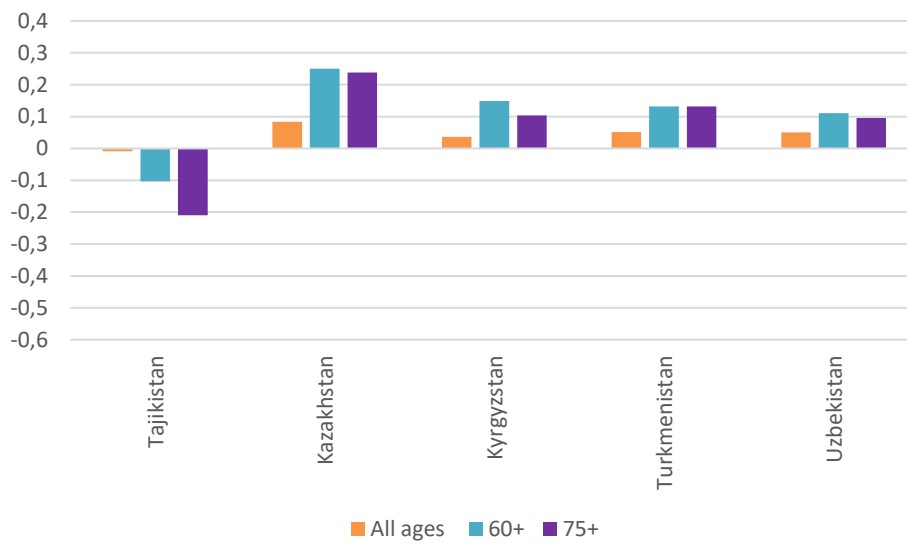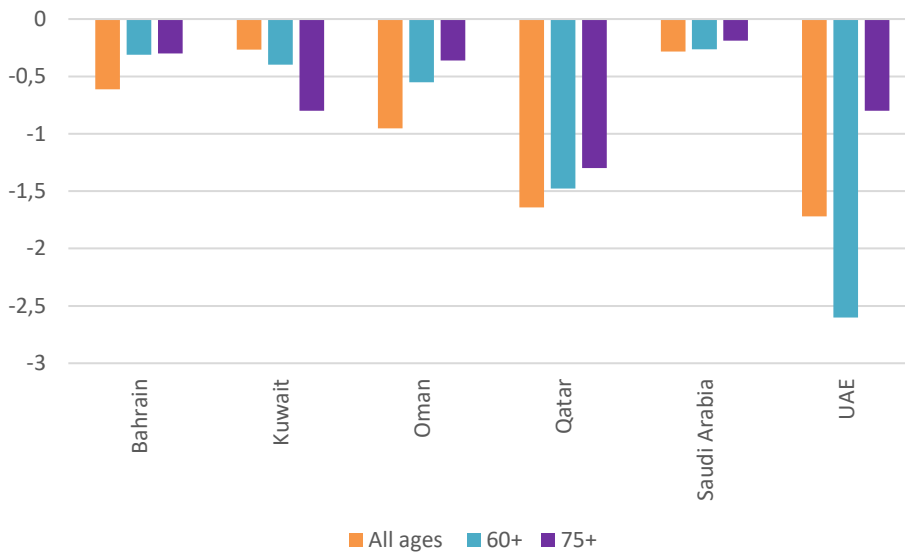Figure 5. Missing Women in Central Asia, 2015

Figure 6. Missing women in non-GCC Western Asia, 2015

Figure 7. Missing women in GCC Western Asia, 2015

accusations often specifically target elderly widowed women in some countries like Nepal (Schnoebelen 2009). However, for the moment it is assumed that the discrepancy level between female discrimination in younger ages (below 60) and amongst elderly is not high enough for the female deficit to become suddenly apparent amongst elderly only. Therefore, surpluses in

the total population accompanied by deficits in the elderly population may be considered as possible cohort effects of missing women.

In total twelve countries may allow for a cohort effect interpretation: Hong Kong and Macao in East Asia, Indonesia, Malaysia, Thailand, Singapore and Laos in Southeast Asia, Iran, Maldives and Nepal in South Asia, Tajikistan in Central Asia and Lebanon in West Asia. The cohort effect in some of these countries becomes even more apparent when considering two things. First, in Macao, Singapore, Indonesia, Laos and Thailand the elderly missing women phenomenon is apparent in only one of the two elderly age categories (i.e. 60+ in the former three countries and 75+ in the latter two countries). Second, in Hong Kong, Macao, Malaysia, Maldives and Nepal there exists a significant difference between the female deficit in at least one category of the elderly population and the female surplus in the total population. This could suggest that the birth cohort affected by the elderly missing women phenomenon is an outlier in these countries, and on average factors across the life course do not accumulate to create the elderly missing women phenomenon therein.

For the remaining 19 countries the female deficit in the elderly population is accompanied by a female deficit at all ages. In the majority of these remaining countries not only does the female deficit in the elderly population exceed the deficit in the total population but also the deficit in the 75+ population exceeds the deficit in the 60+ population. Both facts hold for China in East Asia, Timor-Lest in Southeast Asia, Afghanistan, Bangladesh, Bhutan and Pakistan in South Asia and Kuwait, Jordan Palestine, Syria and Yemen in West Asia. In these countries this could be indicative of the increased vulnerability of women in old age but may also point to a trend over time. Conversely, in Oman, Qatar and Bahrain the female deficit seems to subside with age which may indicate an improvement in female survival chances, or more likely a change in the demographic makeup of these countries (as may be caused by return migration discussed later).

Figures 1 to figure 7 estimate the elderly missing women phenomenon with the immigrant stock included. However, gender and age specific immigration may shape the demography of populations (Coale 1991). In fact, the reason Klasen and Wink (2003) don't estimate the

number of missing women for the GCC countries is that they suspect the results to be heavily distorted by male dominated immigration to these countries. This is justified by Cainkar's (2013) contention that contrary to the trend in a majority of countries worldwide where women have comprised approximately half of the immigrant population over the past forty years, the GCC countries have a much lower female share of immigrants. To correct for the gender specific distortion caused by immigration, the female deficit in the different regions of Asia upon the exclusion of the immigrant stock from each country needs to be re-estimated. However, since the available data on migrants pertains to the number of immigrants only it might be fruitful to get a brief glimpse of the overall migration patterns in the regions and countries of interest to assess the extent to which the absence of emigration data may affect the results.

Migration trends have allowed distinct patterns to emerge among Asian countries. The East and Southeast Asian regions consist of emigration countries, immigration countries and both emigration-immigration countries: Emigration countries include Philippines, China, Cambodia, Indonesia, Burma, Laos and Vietnam; immigration countries include: Japan, South Korea, Taiwan, Hong Kong, Singapore and Brunei; emigration-immigration countries include: Malaysia and Thailand (Hugo 2005, Asis 2005). All countries of South Asia are emigration countries (Haque 2005). All post-Soviet countries of Central and Western Asia are labor emigration countries (Tishkov, Zayinchkovskaya & Vitkovskaya 2005). Amongst the remaining countries in Western Asia, the GCC countries of the Middle East are labor importing countries only and hence immigration countries while the non-GCC countries of the Middle East are both emigration-immigration countries (Cainkar 2013, Kronofol 2013, Fargues 2006).

For countries classified as immigrant countries only, the subtraction of immigrants could yield fairly accurate results on the missing women profile of the country however for countries that are emigrant and both immigrant/emigrant, this subtraction would not provide an accurate representation of the female deficit in the elderly population. Therefore, a rudimentary analysis of the gendered nature of emigration might aid in understanding the extent to which emigration may affect the female deficit. It may be assumed at this point that the only type of emigration that would distort the results for missing women is individual emigration and not family

emigration as, it may be assumed for the moment, that sex ratios of family members in the aggregate, may balance each other out and not create an overall surplus or deficit of women in the total/elderly population. In terms of individual permanent emigration women seem to predominate as a large portion of this emigration is marriage based emigration and may involve women from less developed countries emigrating to marry men from more developed countries (Hugo 2005, Tseng 2010). With reference to cross continental marriage emigration (i.e. from Asian to North America and Europe) women predominantly originate from Philippines or Thailand (Hugo 2005). Marriage emigration is also predominant within the East/Southeast Asian region and follows the same pattern of brides emigrating from poorer countries to richer countries (Jones 2012, Tseng 2010). Within this region the immigrant/destination countries for brides are Hong Kong, Taiwan, South Korea and Japan while the emigration/origin countries of brides are China[ii], Indonesia, Philippines, South Korea (to Japan), and Vietnam (Tseng 2010). Due to the restrictive nationalization policies of East/Southeast Asian countries, marriage is the only way for immigrants to attain citizenship of these countries (Tseng 2010). Hence, it may be assumed that once these women immigrate and marry, they would attain the nationality of their husband's country and not be counted as immigrants in the listed destination countries. Therefore, although marriage migration may create a female deficit in the countries of bride emigration/origin (Rallu 2008), their effect on sex ratios would not be discernible upon the subtraction of immigrants from the population in the country of destination. A time trend of sex ratios of migration would suggest that the preponderance of women from all major labor exporting countries is increasing in international emigration however cultural factors prevent individual women from some countries like Bangladesh from emigrating (Hugo 2005). The feminization of migration is mostly associated with emigration from countries like Indonesia, Sri Lanka and Philippines where women comprise 62% to 75% of annual legal work deployment (Asis 2005). Filipino women are predominant as domestic workers in the Middle East but also as skilled workers (e.g. nurses) in North America (Asis 2005, Hugo 2005). Nevertheless, from the remaining sending countries – e.g. the majority of countries of South Asia – the bulk of individuals who migrate for work related purposes are male and return upon the end of their working years (Haque 2005). Both types of emigration however preclude temporary emigration for study. Hugo (2005) finds that Asian immigrant students who come to Australia are, on average, equally likely to be male and female, although variations exist at the country level. It will be assumed that students from all Asian countries who emigrate to

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study are equally likely to be male or female and therefore do not create distortions in sex ratios in their country of origin via this channel alone.

Figures 8 to figure 14[iii] display the elderly missing women phenomenon for all regions and countries of Asia upon the exclusion of immigrants. Although the results are somewhat similar to Figure 1 (i.e. East Asia, South Asia and GCC region of Western Asia continue to exhibit a female deficit in the total and elderly populations) it is apparent that the size of the deficit in the GCC region of Western Asia in figure 8 is smaller for all three age categories (especially for the 75+ age category). It would therefore appear that immigration has a strong impact on the female deficit in this region. While this may not be very surprising for the female deficit in the total population due to the presence of male dominated labor immigration, it is somewhat surprising that this deficit does not disappear in the elderly population upon the end of the working years of these immigrants. Given the strict nationalization policies of the GCC countries, the persistence of this deficit may point to the bulk of illegal immigration in these countries (and hence the difficulty in attaining exist visas; Shah 2013) and/or to the accumulation of a female survival advantage across the life course, both in terms of morbidity and mortality. In South Asia, the exclusion of immigrants does not have much effect on the female deficit in either age category. These results are not surprising. Barring inflow of refugees from Afghanistan to Pakistan and Iran (Haque 2005), the countries of the region are classified as net emigration countries so an exclusion of immigrants from the region as a whole would not be expected to have much effect on the female deficit since Afghanistan is also in the South Asian region. Similarly, the exclusion of immigrants has little effect on the female deficit of East Asia.

Figures 9 to figure 14 show how the situation of individual countries within each region changes upon the exclusion of immigrants. At the intraregional level, the exclusion of immigrants has eliminated the elderly missing women phenomenon in Kuwait, which now has the largest female surplus in Asia in the total and 60+ populations, and introduced it in Israel in both elderly categories (60+ and 75+) and in Philippines in the total population only. Further, the cohort effect interpretation can now be extended to Bangladesh and Qatar for both elderly

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Figure 8. Missing women by region, excluding immigrants, 2015
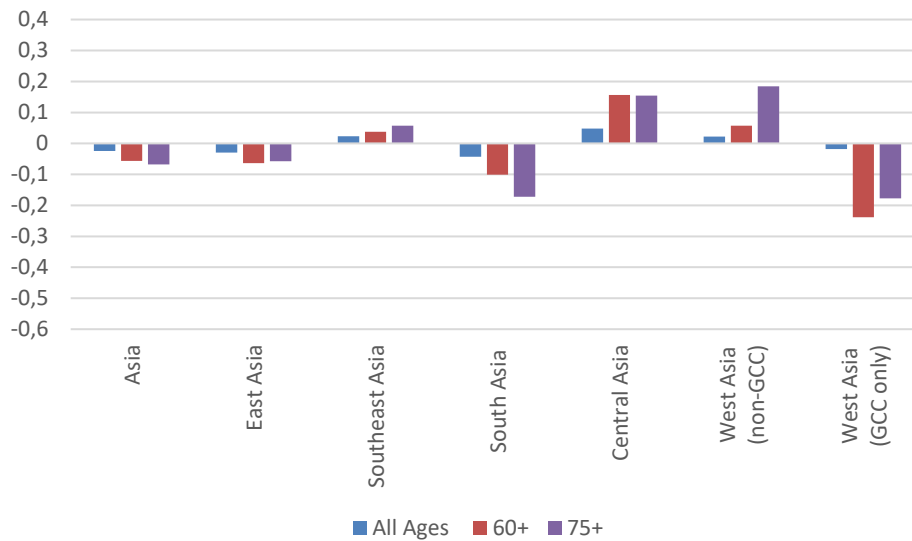
age groups and the strength of this interpretation has increased for Maldives which now exhibits a female deficit in one elderly category only (i.e.75+). Bahrain, shows that a cohort effect in the opposite direction may also be possible as female deficits in the 75+ and total population are accompanied by a small female surplus in the 60+ population. Existing literature on missing women may show how this is possible. For example, in the case of China, Das Gupta and Shuzhuo (1999) show that government policy during the Maoist regime in the 1950's led to more equitable treatment of men and women and in the case of Bangladesh Dyson (1991a, 1991b) shows that female adult mortality during the five major famines of the subcontinent (Pakistan, India and Bangladesh) was lower due to lower fertility. Effects of this may be exhibited in specific cohorts of the population in the form of a reduced female deficit or a female surplus contingent upon the cumulative impact of other factors across the life course. However, for Hong Kong and Lebanon the possibility of a cohort effect interpretation needs to be retracted as it now experiences a female deficit in its total populations as well. It is to be noted from the discussion on migration that Hong Kong is a recipient of labor immigration but not bride immigration. Therefore, the appearance of a female deficit in the total population upon the exclusion of immigrants may imply the existence of large number of female labor immigrants in Hong Kong. The UAE still exhibits the largest female deficit in the 60+ and total population, with the deficit in both categories increasing, while Qatar still shows the largest female deficit in the 75+ population.

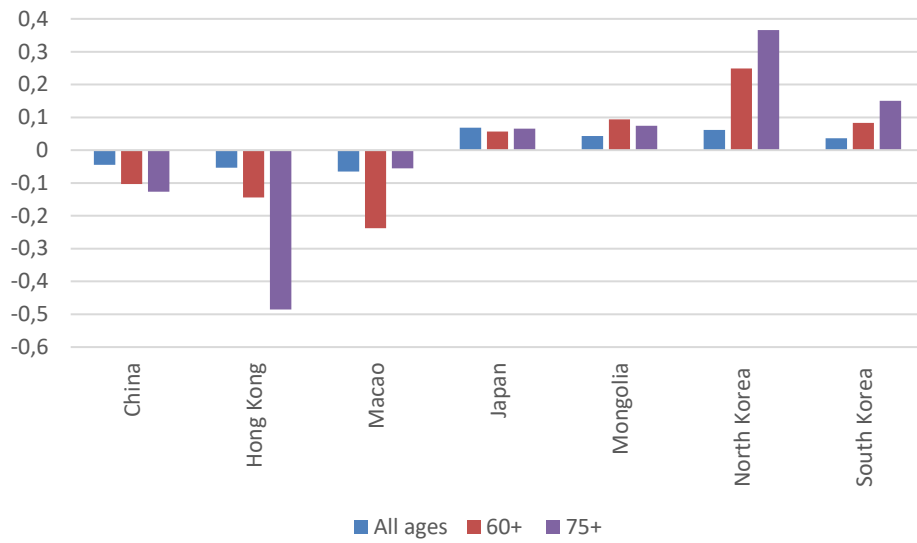Figure 9. Missing women in East Asia, excluding immigrants, 2015

Figure 10. Missing women in Southeast Asia, excluding immigrants, 2015
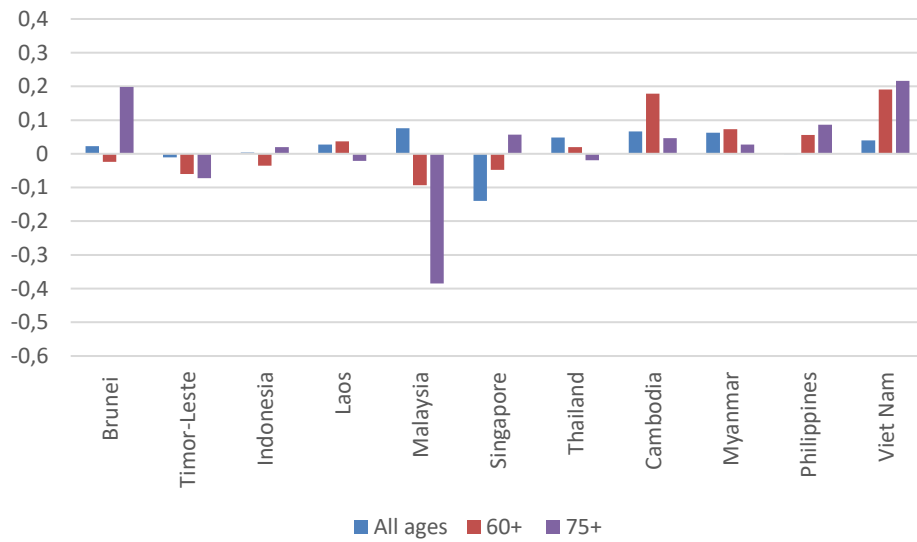
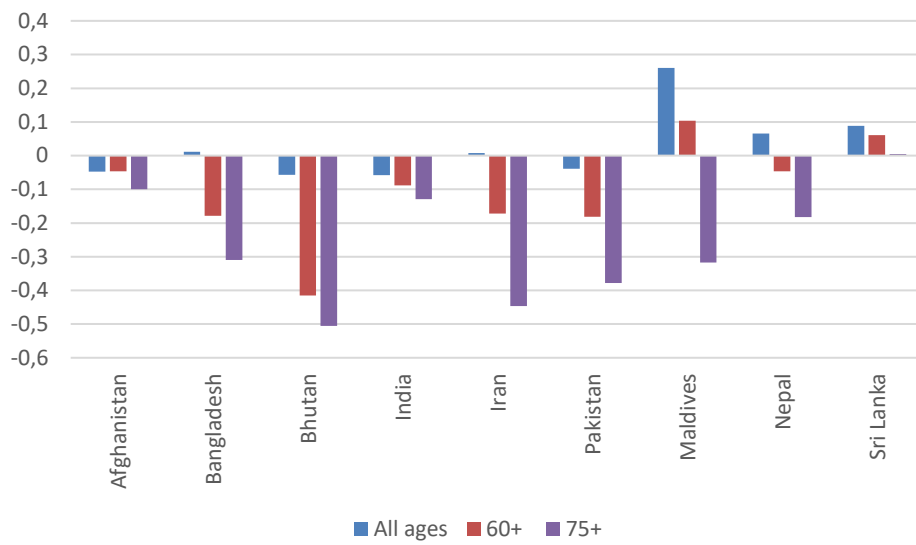Figure 11. Missing women in South Asia, immigrants excluded, 2015

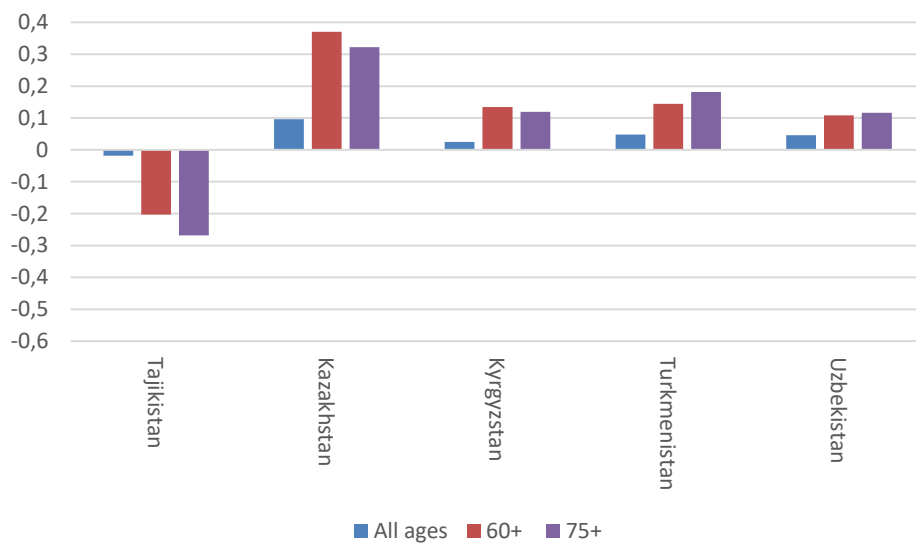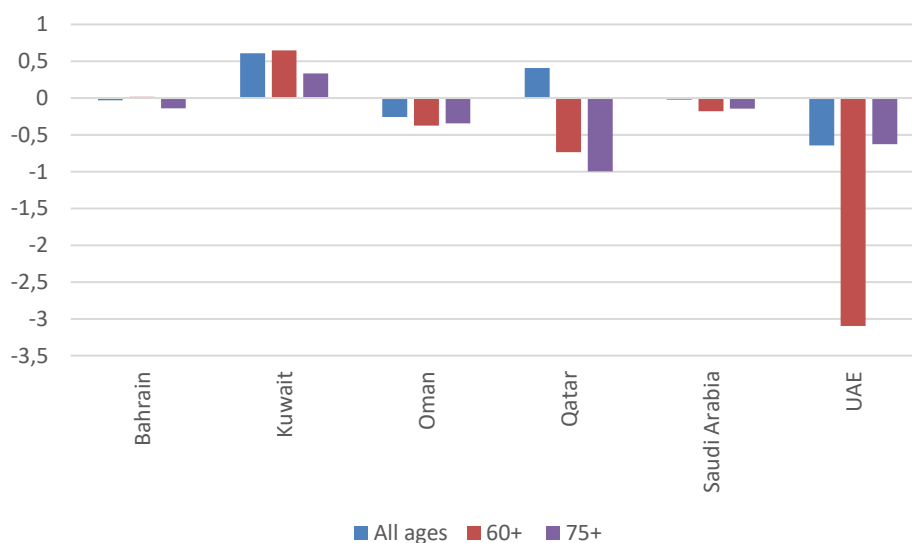Figure 12. Missing women in Central Asia, excluding immigrants, 2015

Figure 13. Missing women in non-GCC Western Asia, excluding immigrants, 2015

Figure 14. Missing women in GCC Western Asia, excluding immigrants, 2015

Overall, the exclusion of immigrants has reduced the number of elderly missing women in China, Malaysia, Thailand, Timor-Leste, Iran, Maldives, Pakistan, Bahrain, Cyprus, Jordan, Qatar, Bangladesh, Iraq, Bhutan, Laos, Saudi Arabia and Afghanistan. On the other hand, there are some countries which have also experienced an increase in the female deficit in old age as

result of this exclusion: Yemen, Singapore, Macao, Palestine, Hong Kong, Tajikistan and Nepal. The UAE, Syria and Lebanon witnessed an increase in female deficit in their 60+ but a reduction in their 75+ populations while the converse is true for Oman. Overall, the change in the female deficit in these countries is somewhat surprising as it implies a large number of individual immigrants in the 60+ population. For example, for the first set of countries the results may imply an excessively large male vis-á-vis female immigrant population in the 60+ age categories. Within this first set, the results may not be as surprising for some countries that are immigration countries or emigration/immigration countries (e.g. Qatar, Saudi Arabia, Malaysia and Thailand) as it may reflect the residual labor immigrants from earlier years of work. However, if migration is becoming increasingly feminized the only region for which this argument would hold is the GCC region of Western Asia especially given that many labor immigrants may enter these countries illegally and may face difficulties obtaining exit visas (Shah 2013). In the future this argument may become weaker as even in these countries the number of female immigrants from East/Southeast Asia is increasing. Hence, the presence of individual male immigrants in the 60+ population, the total sum of whom is large enough to distort the sex ratios in the entire 60+ population is an issue that requires further exploration.

Discussion and conclusion

This comparison of elderly missing women across Asia indicates an inaccurate geographical specificity in missing women literature. Existing literature on the topic has mostly focused on younger age groups in specific countries of East, Southeast and South Asia. The results reveal that even in East and Southeast Asia there are countries that display an elderly missing women phenomenon that the literature has not concentrated on (e.g. Thailand, Laos). However, for a majority of the countries herein the phenomenon is apparent as a cohort effect that may be expected to disappear in future decades. The three exceptions are China, Timor-Leste and Brunei Darussalam where the female deficit in both elderly categories is accompanied by a deficit in the total population. As already mentioned China is the most frequently discussed country in missing women literature and the most recent estimates suggest that in 2010 there were about 62.3 million missing women in the total population of the country i.e. about half of the world's missing women are concentrated in the country (Bongaarts & Guilmoto 2015).

However, as Klasen (2008) argues, China presents a special case. The imposition of the One Child Policy in the country served as an exogenous shock that amplified the factors behind masculinized sex ratios at birth. Hence, the elderly missing women phenomenon may in part be a reflection of decades of government policy. Nevertheless, the presence of China on the list is a cause for alarm as it constitutes 18.7% of the world's population and is one of the fastest ageing countries in the world (Bloom et al. 2003), UNDESA (2015). Although Brunei Darussalam and Timor-Leste display a trend similar to China (i.e. a non-cohort effect interpretation), their situation is less alarming as they present 0.3% of the population of Southeast Asia, although they are ageing very rapidly (Jones 2013).

More striking are the results for South Asia and especially the Middle Eastern region of Western Asia. In South Asia all countries except Sri Lanka display a fairly large female deficit in their elderly populations with the deficit for many of these countries (e.g. Bhutan and Afghanistan) not only being accompanied by a deficit in the total population but also being mostly ignored by literature. Furthermore, all the Middle Eastern countries of Asia, except Israel, depict an elderly missing women phenomenon in their populations. The female deficit in the elderly population for a majority of the countries cannot be interpreted as a possible cohort effect and exceeds the female deficit in the total population of the respective country. Further, the female deficit for some of the countries in the region, exceeds that of any other country on the continent not only in the total population but also in the elderly population and the main results for the GCC countries (on average) continue to hold after the subtraction of immigrants. This is the most unexpected result because the Middle Eastern countries of Asia have barely been evaluated by missing women literature. The results therefore reveal that the literature is inaccurately concentrated on specific countries and needs to reorient itself towards later life stages in South Asia and the Middle Eastern region of Western Asia.

The exclusion of immigrants changes the main results for some countries: e.g. the presence of a female deficits in the total population of Philippines and the elderly population of Israel. However, as data on emigration trends (by both gender and age) is absent, a subtraction of immigrants alone does not provide an accurate representation of the national population and may change some of the findings as for example in the case of the Philippines as the country

is known for its feminized emigration patterns (Hugo 2005) so accounting for emigrants may reverse the female deficit in the total population. Nevertheless, it becomes evident that migratory patterns have an important bearing on the missing women phenomenon.

A second caveat that may hamper an exhaustive analysis of the elderly missing women phenomenon is the absence of longitudinal data for a majority of countries herein. Longitudinal data would allow the birth cohorts that present the female deficit in old age to be traced to the earliest life stage and therefore not only allow an identification of the timing of the deficit but also, for countries presenting the phenomenon as a cohort effect, a confirmation of whether a specific war or natural disaster in the history of the affected country has perpetuated the female deficit.

The identification of the elderly missing women phenomenon in the respective countries nevertheless allows for some policy recommendations. In this regard the example of South Korea comes to mind which to data has been the only country to have successfully reversed the phenomenon (albeit at the time of birth) via extensive government intervention and media awareness campaigns that changed social norms regarding the position of women in society (Chung & Das Gupta 2007). Reversing the phenomenon in old age is a more complicated issue as it requires systematically targeting the phenomenon at each life stage. In addition to government legislation promoting equality, one possibly effective mechanism may be the implementation of social pensions. Social pensions may improve the survival chances of women via three mechanisms: First, elderly in general receive better treatment from other household members and can provide improved care for themselves if they are contributing to intergenerational patterns of exchange monetarily via cash or non-monetarily via assets (Lloyd-Sherlock 2000). Second, social pensions provide elderly women (who are often the most vulnerable household members) a mechanism for consumption smoothing and a barrier against uncertainties so that these women may be able to cushion themselves from the negative consequences of unexpected events (e.g. unemployment of household members, natural disasters; Künemund et al. 2017). Finally, social pensions aimed at elderly women may have a positive multiplier effect on women or girls in earlier life stages and thereby improve the missing women situation at different life stages (Duflo 2003).

Acknowledgements

References

Adamou, A., Drakos, C., & Iyer, S. (2013). Missing women in the United Kingdom, IZA Journal of Migration 2(1): 1–19.

Anderson, S., & Ray, D. (2010). Missing Women: Age and Disease, Review of Economic Studies 77(4): 1262–1300.

Anderson, S., & Ray, D. (2012). The age distribution of missing women in India, Economic and Political Weekly 47–48(47): 87–95.

Anderson, S., & Ray, D. (2015). Missing Unmarried Women. Cambridge, MA: National Bureau of Economic Research. No. 21511.

Asis, M. M. B. (2005). Recent trends in international migration in Asia and the Pacific, Asia-Pacific Population Journal 20(3): 15–38.

Attané, I. (2006). The Demographic Impact of a Female Deficit in China, 2000-2050, Population and Development Review 32(4): 755–770.

Banister, J. (2004). Shortage of girls in China today, Journal of Population Research 21(1): 19–45.

Bloom, D. E., Canning, D., & Sevilla, J. (2003). The demographic dividend: a new perspective on the economic consequences of population change. Santa Monica, California: RAND.

Bongaarts, J., & Guilmoto, C. Z. (2015). How Many More Missing Women? Excess Female Mortality and Prenatal Sex Selection, 1970-2050, Population and Development Review 41(2): 241–269.

Cainkar, L. (2013). Global Arab World Migrations and Diasporas. Arab Studies Journal. 21(1): 126 165.

Chalise, H. N., & Brightman, J. D. (2006). Aging trends: Population aging in Nepal. Geriatrics and Gerontology International 6(3): 199–204.

Chawla, M., Betcherman, G., & Banerji, A. (2007). Chapter 1: The Demographic Transition in Eastern Europe and the Former Soviet Union. In From Red to Gray: The "third Transition" of Aging Populations in Eastern Europe and the Former Soviet Union. World Bank Publications.

Chen, L. C., Huq, E., & D'Souza, S. (1981). Sex Bias in the Family Allocation of Food and Health Care in Rural Bangladesh. Population and Development Review 7(1): 55.

Chung, W., & Das Gupta, M. (2007). The decline of son preference in South Korea: The roles of development and public policy. Population and Development Review, 33(4): 757–783.

Coale, A. J. (1991). Excess Female Mortality and the Balance of the Sexes in the Population: An Estimate of the Number of "Missing Females." Population and Development Review 17(3): 517.

Das Gupta, M., & Shuzhuo, L. (1999). Gender bias in China, South Korea and India 1920–1990: Effects of war, famine and fertility decline. Development and Change, 30(3): 619–652.

David, C. (2007). The impact of aging on Asian development. Paper presented at the Asian Development Bank seminar on Aging Asia: A New Challenge for the Region, Kyoto & Tokyo, Japan

Dubuc, S., & Coleman, D. (2007). An Increase in the Sex Ratio of Births to India-born Mothers in England and Wales: Evidence for Sex-Selective Abortion. Population and Development Review 33(2): 383–400.

Duflo, E. (2003). Grandmothers and Granddaughters: Old-Age Pensions and Intrahousehold Allocation in South Africa. The World Bank Economic Review 17(1): 1–25.

Duthé, G., Meslé, F., Vallin, J., Badurashvili, I., & Kuyumjyan, K. (2012). High Sex Ratios at Birth in the Caucasus: Modern Technology to Satisfy Old Desires, Population and Development Review 38(3): 487–501.

Dyson, T. (1991a). On the Demography of South Asian Famines: Part I, Population Studies 45(1): 5–25.

Dyson, T. (1991b). On the Demography of South Asian Famines Part II, Population Studies 45(2): 279–297.

Ebenstein, A. Y., & Sharygin, E. J. (2009). The Consequences of the "Missing Girls" of China, The World Bank Economic Review, 22(3): 399-425.

Ezdi, S. (2017, April). The Elderly Missing Women Phenomenon. University of Vechta, Vechta, Germany.

Fargues, P. (2006). International migration in the Arab region : trends and policies. Paper presented at the United Nations Expert Group Meeting on International Migration and Development in the Arab Region, Beirut, Lebanon.

Goodkind, D. (1996). On Substituting Sex Preference Strategies in East Asia: Does Prenatal Sex Selection Reduce Post Natal Discrimination?, Population and Development Review 22(1): 111–125.

Guilmoto, C. Z. (2009). The sex ratio transition in Asia, Population and Development Review 35(3): 519–549.

Guilmoto, C. Z. (2012). Son Preference, Sex Selection, and Kinship in Vietnam, Population and Development Review 38(1): 31–54.

Hayutin, A. (2009). Critical Demographics of the Greater Middle East: A New Lens for Understanding Regional Issues, Stanford Center on Longevity, Global Ageing Program.

Hugo, G. (2005). Migration in the Asia-Pacific region. Paper presented at the Policy Analysis and Research Programme of the Global Commission on International Migration.

Hull, T. (1990). Recent Trends in Sex Ratios at Birth in China, Population and Development Review 16(1): 63–83.

Iyer, S., & Joshi, S. (2013). Missing Women and India's Religious Demography, Journal of South Asian Development 8(3): 301–331.

Jejeebhoy, S. J., & Sathar, Z. A. (2001). Women's Autonomy in India and Pakistan: The Influence of Religion and Region, Population and Development Review 27(4): 687–712.

Jiang, Q., Feldman, M., & Jin, X. (2005). Estimation of the number of missing females in China: 1900 – 2000, Chinese Journal of Population Science 4: 2–11.

Jones, W. G. (2012). Marriage Migration in Asia: An Introduction. Asian and Pacific Migration Journal 21(3): 287–290.

Jones, G. (2013). The population of Southeast Asia, National University of Singapore, Asia Research Institute. Working paper series No. 196.

Kim, D. S. (2004). Missing Girls in South Korea: Trends, Levels and Regional Variations, I.N.E.D Population (English Version) 59(6): 865–878.

Klasen, S. (1994). "Missing Women" Reconsidered, World Development 22(7): 1061–1017.

Klasen, S., & Wink, C. (2002). A turning point in gender bias in mortality? An update on the number of missing women. Population and Development Review 28(2): 285–312.

Klasen, S., & Wink, C. (2003). "Missing Women": Revisiting the debate, Feminist Economics 9(2–3): 263–299.

Kronofol, N. (2013). Review Demographics and the social reckoning in the Arab region, Eastern Mediterranean Health Journal 19(4): 382–388.

Kulkarni, P. M. (2007). Estimation of Missing Girls at Birth and Juvenile Ages in India. United Nations Population Fund.

Künemund, H., Horn, D., & Zaidi, A. (2017). Setting the Stage: from costs to investment. In Investing in an Ageing World: Shifting debates from costs to investment (pp. 14–45). London, United Kingdom: HelpAge International.

Lin, M.-J., Liu, J.-T., & Qian, N. (2014). More Missing Women, Fewer Dying Girls: The impact of sex-selective abortion on sex ratios at birth and excess female mortality in Taiwan, Journal of the European Economic Association 12(4): 899–926.

Lin, M.-J., & Luoh, M.-C. (2008). Can Hepatitis B Mothers Account for the Number of Missing Women? Evidence from Three Million Newborns in Taiwan, American Economic Review 98(5): 2259–2273.

Lloyd-Sherlock, P. (2000). Old Age and Poverty in Developing Countries: New Policy Challenges. World Development, 28(12): 2157–2168

Louise C. (2013). Global Arab World migrations and diasporas, Arab Studies Journal 21(1): 126–165.

Haque, M. S. (2005). Migration trends and patterns is South Asia and management approached and initiatives. Asia-Pacific Population Journal, 20(3): 15–38.

Menon, J., & Melendez-Nakamura. (2009). Aging in Asia: Trends, Impacts and Responses. Asian Development Bank. Working paper series No. 25.

Michael, M., King, L., Guo, L., McKee, M., Richardson, E., & Stuckler, D. (2013). The Mystery of Missing Female Children in the Caucasus: An Analysis of Sex Ratios by Birth Order. International Perspectives on Sexual and Reproductive Health, 39(2), 097–102.

Milazzo, A. (2014). Why are Adult Women Missing? Son Preference and Maternal Survival in India, The World Bank. Policy Research Working Paper No. WPS6802.

Mujahid, G., & Siddhisena, K. A. P. (2009). Demographic prognosis for South Asia: A future of rapid ageing, United Nations Population Fund. Papers in Population Ageing No. 6.

P. N. Mari Bhat, & Zavier, F. (2007). Factors influencing the use of prenatal diagnostic techniques and the sex ratio at birth in India, Economic and Political Weekly 42(24): 2292–2303.

Park, C. B., & Cho, N.-H. (1995). Consequences of Son Preference in a Low-Fertility Society: Imbalance of the Sex Ratio at Birth in Korea, Population and Development Review 21(1): 59.

Qian, N. (2008). Missing Women and the Price of Tea in China: The Effect of Sex-Specific Earnings on Sex Imbalance, Quarterly Journal of Economics 123(3): 1251–1285.

Rallu, J. L. (2008). Population, migration and development in Asia with special emphasis on the South Pacific: The impact of migration on population and the MDGs'. Presented at the United Nations Expert Group Meeting on International Migration and Development in Asia and the Pacific, Bangkok, Thailand: United Nations Economic and Social Commission for Asia and the Pacific, United Nations Population Division.

Saxena, P. (2008). Ageing and age-structural transition in the Arab countries: regional variations, socio-economic consequences and social security, Genus 64(1/2): 37–74.

Schnoebelen, J. (2009). Witchcraft allegations, refugee protection and human rights: a review of the evidence, United Nations High Commission for Refugees, Policy Development and Evaluation Service. (Research Paper No. 169).

Sen, A. (1990). More than 100 million women are missing. The New York Review of Books, 37(20).

Sen, A. (1992). Missing Women. Social inequality outweighs women's survival advantage in Asia and North Africa, British Medical Journals 304(6827): 587–588.

Shah, N. M. (2013). Labour Migration from Asian to GCC Countries: Trends, Patterns and Policies, Middle East Law and Governance 5(1–2): 36–70.

Sidorenko, A. (2016). Challenges and opportunities of population ageing in the CIS+ countries. International Journal on Ageing in Developing Countries 1(1): 20–39.

The World Bank. (2017a). Gulf Cooperation Council. Retrieved from http://www.worldbank.org

The World Bank. (2017b). Middle East and North Africa. Retrieved from www.data.worlbank.org

Tseng, Y. (2010). Marriage Migration to East Asia: Current Issues and Propositions in Making Comparisons. In Wen-Shan Yang & Melody Chia-Wen Lu (Eds.), Asian Cross-Border Marriage Migration - Demographic Patterns and Social Issues (Vol. 2, pp. 31–48). Amsterdam University Press.

United Nations, Department of Social and Economic Affairs, Population Division. (2015). The 2015 Revision, Methodology of the United Nations Population Estimates and Projections. Working Paper No. ESA/P/WP.242. .

United Nations, Department of Economic and Social Affairs, Population Division. (2015a). World Population Prospects: The 2015 Revision

United Nations, Department of Economic and Social Affairs. (2015b). Trends in International Migrant Stock: Migrants by Age and Sex (United Nations database, POP/DB/MIG/Stock/Rev.2015).

United Nations Department of Economic and Social Affairs. (2014). World Population Prospects: The 2012 Revision, Methodology of the United Nations Population Estimates and Projections, Working Paper No. ESA/P/WP.235.

United Nations Economic and Social Council. (2010). Retrieved from https://unterm.un.org/

Tishkov, V., Zayinchkovskaya, Z., & Vitkovskaya, G. (2005). Migration in the countries of the former Soviet Union. Paper presented at the Policy Analysis and Research Programme of the Global Commission on International Migration.

Venkatesh, S., & Vanishree, M. R. (2014). Feminization among elderly population in India: role of micro financial institutions, Global Journal of Finance and Management 6(9): 897–906.

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i   The range of values differs for the graph representing the GCC region of Western Asia to allow for better visualization of results.

ii   The inclusion of China as a bride emigration country is somewhat inconsistent with existing evidence from literature (e.g. Hudson & Den Boer 2009) which shows that China is increasingly exhibiting an imbalance in the marriage market in terms of missing brides. Furthermore, increasing evidence from literature shows that China is compensating for the missing brides phenomenon by "importing" from poorer countries in the region (Ebenstein & Sharygin 2009). This would make China somewhat of an immigration country for brides as well although the trend may be too recent for numbers to be significantly present.

iii   The range of values differs for the graph representing the GCC region of Western Asia to allow for better visualization of results.