RUNNING HEAD: Demographic Transition

Globalization and Demographic Transition

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The last 150 years, and the last thirty years in particular, have witnessed a massive change in the global economy, defined by three phases of globalization that have restructured the organization of production (Palley, 2018). The first globalization, from 1870 to 1914, was characterized by improvements in transportation; the second, from 1945 to 1980, by improvements in communication. The third globalization, beginning in 1980 and continuing through the present day, is driven by the corporate desire to increase profits at all costs. This desire has spurred corporate outsourcing of production to countries with cheap and abundant labor, increasing labor demand and urbanization in the Global South. These processes have not simply changed the economy, however; they have contributed to the process of demographic transition across the world. Globalization has brought with it fertility decline, lower mortality, and increased internal and external migration, all of which promise to reshape the structure and composition of the population both across and within countries. This paper will trace the trends and processes of demographic transition, showing how globalization and its effects have also contributed to the population shifts seen across the world.

Demographic transition is the process by which a population undergoes a fundamental change in its composition. It occurs through three main channels: fertility, mortality, and migration. Fertility describes the rate of childbirth in a society, measured by the total fertility rate (TFR): the average number of children each woman[1] in a particular country bears throughout her lifespan. Ideally, a population's TFR should be close to the "replacement rate," defined as 2.1. This means that the average woman will bear 2.1 children throughout her life; assuming a relatively

[1] This paper uses "woman" as shorthand for people who can bear children, and "man" as shorthand for people who cannot bear children. I acknowledge that gender is a construct, not every woman can bear children, and not everyone who can bear children is a woman; however, given that fertility measures across the world are in terms of "woman" as an exclusively biological category, this is the terminology I use.

even sex ratio[2], each woman must then bear one child to "replace" herself and one to "replace" a man (United Nations, 2007). Mortality measures the number of deaths in a society and is generally augmented by life expectancy and infant mortality to provide a better understanding of a society's overall well-being. Finally, migration represents the movement of people from one area to another, both internationally and domestically (Garcia-Alexander, Woo, & Carlson, 2017). This analysis will first discuss fertility and mortality as these features relate to globalization, then return to migration later on in the paper.

According to demographic transition theory, fertility tends to fall as an economy develops. Pre-industrialization, death rates are high due to undeveloped health systems, and birth rates are high to ensure that some children will survive to adulthood, and large families are desired to provide labor for the family farm or other business (Bongaarts & Casterline, 2013). When industrialization begins, death rates start to fall due to improvements in medical care and health outcomes, but there is a lag before families realize that they do not need to have so many children to compensate for deaths. This second phase of demographic transition is when population growth occurs. Once families recognize that they can have fewer children, desired family size falls, and parents use contraception and abortion technologies to satisfy their desires. The TFR declines and approaches the replacement rate of 2.1. In the fourth and final stage, birth and death rates remain low. As long as the TFR remains near the replacement rate, the population stays large, stable, and sustainable (Garcia-Alexander et al., 2017).

Much of the advanced world has followed this trajectory in its development – in the United States, for instance, prior to the Industrial Revolution, the TFR was fairly stable at 7 children borne per woman; it then steadily declined post-industrialization, reached its nadir of 1.74 in 1976, and

[2] For simplicity, I assume an even sex ratio, but there is substantial evidence suggesting that sex ratios in many countries are biased towards men (Sen, 1992; Bongaarts & Guilmoto, 2015; Canetto, 2018).

is now estimated at 1.9 (Garcia-Alexander et al., 2017). But if the TFR dips below the replacement rate, as it has in Europe, this leads to long-term population decline. In a Malthusian sense, population decline has positive implications for sustainability. According to Malthus' (1798) *Essay on the Principles of Population*, human reproduction is theoretically infinite, but is constrained by food production, which is limited by land and agricultural capacity. Increasing the population beyond that capacity will result in "misery and vice," in which the working class suffers because food is scarce and they cannot afford enough to sustain themselves (Medema & Samuels, 2013). While food production has advanced significantly since Malthus' writing, enabling us to sustain a far greater number of people than we could before, high fertility and a high population remains a concern for other social and environmental reasons – for instance, high fertility is related to high maternal mortality, and a high population is associated with deforestation and over-farming (Leblanc, 2018; United Nations, 2007). Voluntary fertility decline is often associated with higher living standards, higher investment in children ("quality over quantity"), and women's labor force participation (LFP), all of which are generally good for economic growth (Braunstein, 2015; Yeoh, Lutz, Prachuabmoh, & Nurvidya, 2003).

However, the concerns associated with high population must be balanced against the concerns associated with fertility below replacement. If a population decreases too rapidly to below its replacement level, this endangers the sustainability of a population and its labor force. Most countries experiencing low fertility are in Europe, whose aging population is attributed to its advanced economic status that leads to increased availability of contraception and abortion, delayed or deferred marriage, and increased female LFP – in 2018, the European Union reported a TFR of 1.5 (Garcia-Alexander et al., 2017; World Bank, 2019). The other region experiencing low fertility is East Asia: while its average TFR is 1.8, the "superpowers" of the region are almost

entirely well below replacement, with China at 1.6, Japan at 1.4, and South Korea at 1.0 (World Bank, 2019). These two regions are experiencing rapid aging, which threatens the future sustainability of an economy if they lack sufficient labor supply to meet the demand. The shrinking labor force in Europe, for instance, is expected to result in an economic contraction due to lower productivity (Bloom, Canning, Fink, & Finlay, 2009). In addition, the increased dependency ratio promises significant stress on an economy's social welfare provisioning. The dependency ratio is defined as the ratio of non-workers to workers in the population, generally measured by age: a non-worker is anyone under the age of 15 and over the age of 65 (Garcia-Alexander et al., 2017). Workers earn wages to support themselves and dependents, both their own and others, through social insurance taxes like Social Security in the United States. However, many Asian countries do not have these kinds of insurance programs, and certainly not ones that are equipped to handle the rapid increase of people who will need their services (Yeoh et al., 2003; Ebenstein & Sharygin, 2009). Care is expected to be provided by the family unit, and there are few alternatives to elder care outside the family (Braunstein, 2015). Even in European countries with relatively robust pension and health systems, the social safety net is not equipped to operate at full capacity when the working population that supports it shrinks (Bloom et al., 2009).

While the developed world is experiencing a demographic shift towards an older population, the reverse is true in emerging economies. South Asia currently has a TFR just above replacement (2.4), while Sub-Saharan Africa's TFR of 4.6 makes it the world's youngest region, reflecting its position in the second phase of demographic transition (World Bank, 2019; Kochhar, Jain-Chandra, & Newiak, 2019). Kochhar et al. (2019) estimate that 3 billion residents of developing countries are under the age of 25. In Sub-Saharan Africa alone, where the demographic transition is happening much later than in other regions, the population is expected to increase

from 0.8 billion to 2 billion by 2050, and the number of people reaching working age in 2035 is expected to be higher than in the rest of the world combined (Bongaarts & Casterline, 2013). The resulting "youth bulge" in these two regions has generally positive implications for economic growth in the form of the "demographic dividend," a term that refers to the increased productivity an economy experiences when its dependency ratio declines. A greater number of workers relative to dependents means that an economy can save the resources it would otherwise spend on dependent care, while the increased working population stimulates aggregate demand (Mueni, 2016). This demographic dividend has paid off for many developing countries, such as India, whose dividend may account for 40-50% of its per capita growth since the 1970s (Aiyar & Moody, 2011; qtd. in Kochhar et al., 2017). However, this dividend may be contingent on fertility decline to ensure that workers indeed make up a greater share of the population, which has spurred a new wave of family planning policy initiatives in Sub-Saharan Africa aiming to do just that (Mueni, 2016).

The demographic dividend is not, however, a sure thing even with fertility decline, as it also depends on sufficient labor demand and investments in health and education. Many African countries (both North and Sub-Saharan) do not currently have sufficient labor demand in the formal sector to absorb the doubling (or tripling) of workers in the coming decades, meaning that many of these workers will remain in the low-wage informal sector or unemployed (Guengant & May, 2013). Without adequate jobs and wages, the promise of increased productivity and aggregate demand that could boost African economies will likely go unfulfilled. This unfulfilled promise may lead to social unrest due to mass unemployment, like the Arab Spring uprising in 2011, which Lin (2012) terms a "demographic bomb". He argues that to defuse this bomb, Africa should follow a similar strategy to China and South Korea, whose economic reforms targeting the

youth bulge in the 1970s resulted in millions of new jobs in the manufacturing sector. Unfortunately, the world of export-oriented industrialization (EOI) is very different from the 1970s, and the number of countries simultaneously attempting to utilize this growth strategy has created a glut in the global manufactures market, raising questions about the sustainability of EOI as a pathway to African development (Braunstein, 2016). It also must be noted that in the long run, increased life expectancies and lower fertility will end up creating the same problem with the dependency ratio that is currently being experienced by advanced economies in Europe and Asia, so African and South Asian nations must act now to ensure their infrastructure is prepared to support the huge elderly population that will exist by the end of the century (Kochhar et al., 2019).

While net fertility is an important piece of demographic transition, migration is arguably the key factor in the globalized era, as it has significant implications for both developed countries with low labor supply and developing countries with low labor demand. International migration describes individuals moving from one country to another and can result in either net immigration (more people coming in) or net emigration (more people going out). Determining factors of migration are sorted loosely into "push" and "pull" factors: a "push" factor is one that encourages a person to leave their home country, such as war, famine, or job loss; a "pull" factor is one that drives them to a particular country, such as higher job availability or higher living standards (Garcia-Alexander et al., 2017). Generally speaking, international migration tends to flow from developing countries to developed countries – for example, the United States has added 7.9 million people to its population over the last decade, mostly from Mexico, India, and China (Knapp, 2019). Migration flows are also highly regionalized, such that international migrants from Asia, Africa, and Europe tend to stay within their region of birth, while migrants from the Americas often move outside their home region (International Organization for Migration, 2020). In contrast, internal

migration refers to individuals moving to another location within their own country. This reflects the growing trend towards urbanization, which refers to an increase of the proportion of the population living in urban areas. Today, more of the world's population lives in urban than rural areas, and by 2050, the urban population is projected to outnumber the rural population by a two-to-one ratio (Garcia-Alexander et al., 2019). Urbanization has both positive and negative implications for demographic transition, which will be discussed in depth below.

Globalization has, in many ways, been a driving force behind these demographic transition processes over the last fifty years. As countries industrialize and take their place in the global economy, their populations undergo fundamental shifts in their composition and dispersion in response. The remainder of this paper will evaluate five consequences of globalization that are helping to guide demographic transition: urbanization, brain drain, women's labor in care and industry, trade in medical technologies (especially regarding reproductive health), and premature deindustrialization.

Urbanization reflects the concentration of the labor force into cities. A wealth of literature extolls the economic benefits of cities, arguing that agglomeration economies are key to growth and development (Kofler, Innerhofer, Marcher, Gruber, & Pechlaner 2020; Vargas-Lundius, 2018; UN-Habitat, 2012). Cities attract talent and may give rise to entire industries, such as technology in Silicon Valley or the auto industry in twentieth-century Detroit. Information and communication technology are much easier to set up and maintain in cities than in rural areas, so even if a job can be done remotely, it is less costly for workers to reside in cities where they have ready access to these tools (Kofler et al., 2020). Urban areas tend to have greater economic opportunity (especially in the formal sector), and are associated with higher incomes, productivity, health, and education, all of which leads to lowered rates of poverty and greater economic development (Vargas-Lundius,

2018). In China, for example, the last fifty years have led millions of rural Chinese workers to leave their homes to work in the service and export manufacturing sectors in cities like Beijing, Shanghai, and Shenzhen, which has contributed immensely to the country's economic development in that time (Guan, Wei, Lu, Dai, & Su, 2018). However, urbanization may accentuate inequality between urban and rural areas, as the people who remain in rural areas are generally older, poorer, and less educated and do not reap the economic benefits associated with urbanization: "When youth leave, the educated class leaves – and along with it leadership and a sustainable future for the rural villages and families left behind" (Reeser, 2014).

Closely related to the selection effect associated with urbanization are "brain drain" and "brain waste." Brain drain refers to the phenomenon in which educated people leave their country of origin to seek employment opportunity elsewhere, while brain waste refers to these people being unable to find appropriate employment to match their credentials in a country they have migrated to (Battistella & Liao, 2013). The overwhelming majority of the affected people are young adults in developing countries, whose home countries have been unable to create or attract sufficient employment opportunities to utilize the talent they have amassed by investing in education (UN-Habitat, 2012). Ioannidis (2004) found that, out of 1,523 highly-cited scientists for the years 1981-1999, nearly one-third lived outside their country of origin, and almost all of the top scientists from India and China lived in another country, generally the US, UK, or Canada. Going a step further, Dodani & Laporte (2005) find that five countries (Egypt, Pakistan, India, the Philippines, and South Korea) produce more physicians at their universities than they can absorb into their own health care sector, thus forcing them to seek employment in other countries. The decrease in transportation costs have made it easier than ever for people to move from one country to another to seek gainful employment, and as demand for skilled labor increases in developed countries and

stagnates (or fails to develop) in developing countries, those who can, do, resulting in a flight of human capital that leaves the home economies less able to grow. Brain waste can also be referred to as "skill underutilization," as skilled migrant workers are unable to utilize their full potential. This has negative impacts for both the host country that is missing out on the additional economic gains these migrants could be providing, and the home country that loses the income that could be gained from remittances to family members and the knowledge that these migrants could be circulating at home and abroad (Battistella & Liao, 2013).

An important factor to consider with migration is its distinctly gendered dimension, especially how globalization has impacted the care trade and demand for women's labor. Migrant women from developing countries, at all levels of education, have become commodities for the wealthy seeking to import care workers like nannies, maids, and sex workers (Kofman & Raghuram, 2015; Lan, 2006). Kofman & Raghuram (2015) argue that, not only has production become globalized over the last century, but social reproduction has as well. Globalization has allowed these women to seek relatively well-paying work in other countries, but in many cases, their care work for their own family suffers at the expense of their employers, who pay the wages that financially support their children. As noted by Lan (2006), "their relationship with employers is a combination of physical intimacy and social distance, and the impact of their migration is a juxtaposition of emancipation and oppression" (p. 3). This relationship exacerbates the divide between the rich and poor, as migrant care workers' own families and the social reproduction they could provide are disrupted for the sake of the wealthy in high- and middle-income countries. The market for care workers also reflects brain waste – Battistella & Liao (2013) find that 34.8% of Filipino domestic workers abroad have a college degree, and suggest that many of these workers had originally left home to find a job to match their skill but were unable to do so. The feminization

of the global labor force also is reflected in the industrial sector, where there is high demand for women's labor in "light" export manufactures like textiles and electronics. This demand is hypothesized to be in part due to the perception that women are willing to work for lower wages, are more productive at this type of work, and are more "docile," thus reducing their likelihood of attempting to organize against their exploitation (Standing, 1999; Tejani & Milberg, 2016).

Associated with this increased demand for women's labor (and their increased LFP) comes an increased demand from women for reproductive health services and technologies. In the absence of robust social welfare provisioning, women's increased LFP is negatively related to their fertility as the opportunity cost of their labor increases (Braunstein, 2015). As a result, their demand for family planning services and contraceptives rises, in order to ensure fewer children, to delay having children at all, and to protect themselves from unplanned pregnancies if they engage in sexual activity while working outside the home (Braunstein, 2006). Trade liberalization is associated with greater access to medical technology across the world, as barriers to trade in pharmaceuticals and equipment are lowered. Not only does this mean the technology is available, but also that the increased supply drives the cost down, making it easier to access contraception and other medical services (Grown, 2006). Open trade in reproductive health technologies makes it easier to help ensure maternal and neonatal health as well, since pregnancies that are "too early, too often, too close, and too late" are often associated with high rates of maternal and infant mortality (Guengant & May, 2013). Thus, globalization provides a clear pathway to increasing life expectancy, contributing to the aging population that is representative of demographic transition.

The final way in which globalization impacts demographic transition is via premature deindustrialization. Premature deindustrialization refers to the phenomenon in which the manufacturing sector in developing countries begins to shrink before the industrialization process

has created sufficient jobs, income, and growth to sustain an economy. Typically, deindustrialization occurs in advanced economies, who transition into a service-based economy and typically outsource their manufacturing labor to developing countries. However, later-industrializing countries, such as those in Sub-Saharan Africa, Southeast Asia, and Latin America, are increasingly experiencing this phenomenon as well, and at significantly lower levels of income compared to when advanced economies began to deindustrialize (Rodrik, 2016). Premature deindustrialization has likely arisen due to changes in the manufacturing sector on both the supply and demand sides. On the supply side, improvements in technology have made manufacturing more capital-intensive, reducing the demand for labor and therefore the jobs tied to manufacturing; and have contributed to the "unbundling" of the production process, which has resulted in a fragmentation in which different parts of a product are produced in different places, shrinking the value added to an economy through manufacturing. On the demand side, the increase in global inequality may have reduced global aggregate demand for manufactured goods and increased the demand for services, thus reducing the size of the manufacturing sector worldwide (Grabowski, 2015).

Premature deindustrialization has significant implications for people's living standards, which can be tied to demographic transition. First, Greenstein (2019) has found that premature deindustrialization has a negative effect on household well-being. Well-being is measured by child survival rate, access to clean water, sewage, and electricity, and educational enrollment and attainment. He finds that households headed by a worker in the industrial sector are generally better off than those headed by workers in lower-level service and agricultural occupations; that increases in manufacturing employment improve well-being over time; and that these improvements have been declining over time and manufacturing jobs are not being replaced with other types of

employment. Second, premature deindustrialization has clear implications for labor demand. If economies' industrial manufacturing sectors are shrinking without high-quality jobs to replace them, this pushes more people into the informal sector, which is characterized by lower wages and fewer workplace protections. This contributes to the growing "precariat" class, so named because of the precarious positions that workers find themselves in (Standing, 2014). As discussed above, this could contribute to the "demographic bomb" creating social unrest in parts of Africa, where there are insufficient jobs for the workers coming of age. This may drive workers to leave the country, exacerbating brain drain and potentially brain waste, leaving their home countries poor, elderly, and without a social safety net to ensure care for those left behind.

Demographic transition and globalization are two closely linked processes, neither of which are inherently negative, but both of which lead nonetheless to problems that deserve attention. Countries at all stages of economic development have sought solutions to tackle their growing population concerns, with varying degrees of success and often with disastrous consequences. China's one-child policy, in place from 1979-2015, was introduced primarily to address the problem of surplus labor that threatened their economic development. While the policy was generally successful in that it slowed population growth to the desired level, it has led to unintended consequences such as male-biased sex ratios, due to families wanting their one child to be a boy, meaning that the number of men in China far exceed the number of women, threatening the sustainability of the size of the labor force (Anagnost, 1995). On the reverse side of this, some countries have outlawed contraception and abortion specifically to ensure that they have sufficient labor to sustain their populations. For example, in the 1980s, Romania instituted a series of policies designed to coerce women into having at least four children each, explicitly in order to sustain the labor force: aside from outlawing contraception and abortion, they also enacted a tax on childless

people above the age of 25, and a law forcing women of childbearing age to undergo yearly gynecological exams to ensure their reproductive capacity. These reforms were not accompanied by similar reforms improving social welfare, such that families were forced to have more children than they could afford, to the result that many children died of neglect or were adopted out of the country, making the policies costly and ineffective (Kligman, 1995).

Rather than coercive reproductive legislation, the solution to the problems of demographic transition is more likely to lie in improving living standards for the people who already exist, such that they can take control of their own fertility. In general, fertility in advanced economies is higher among countries with both a high female LFP and robust social welfare and care provisioning systems – Iceland, for instance, has a TFR of 2.2 and a female LFP rate of 82% (Braunstein, 2015). Developed countries may therefore be able to address the declining fertility rate by making their countries more supportive of child rearing, through institution of generous public care provision, parental leave, and universal health care. In the long run, this will also help countries suffering the adverse effects of an aging population, since the dependency ratio will decrease to a more feasible level. Some economists have also suggested that it is in countries' best interest to allow free mobility of laborers such that migrants can flow from countries with excess labor supply to those with excess demand, though this relies on the critical assumption that mobility is costless, raising questions about the feasibility of this movement across borders for the world's poor (Borjas, 2015). Further, this would do little to address concerns of brain drain and brain waste from developing countries. Instead, developing countries would be better served by building up their own infrastructure, education, and employment capacity to encourage growth and ensure sufficient labor demand for the massive number of people reaching working age. The problems caused by the juncture of globalization and demographic transition are not insurmountable – they just require

greater investment in human capacities and social reproduction, which, with sufficient political will and resources, are certainly attainable goals.

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