The sandwich generation in Brazil: demographic determinants and implications

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Abstract

This paper analyzes the demographic determinants and implications of the sandwich generation in Brazil. This generation is characterized by women who have small children and elderly parents alive and are likely to need to devote significant care time to both groups. In the past few decades, Brazil is facing rapid fertility and mortality decline, but average fertility age has changed very little. The combination of those elements has socioeconomic consequences to women and families. More specifically, we investigate: 1) what is the probability of having a small child (less than 1 year) and a living parent?, and 2) which is the average time women spends in the sandwich generation and how it has been changing over time? 3) What is the average age that children experience a grandparent death? We use Brazilian Census data from 1980 to 2010 and microsimulation, using Socsim, to study and analyze those questions.

Key words: sandwich generation, intergenerational relations, SOCSIM, Brazil

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1. INTRODUCTION

The increasing delay in fertility and in mortality changes not only population age structure, but also family relations because they increase the probability of middle-aged women to have elderly parents alive at the same time they have small children to take care. This process is called sandwich generation, and has drawn attention from researchers and policy makers in recent years (Mason and Zagheni, 2014). In the Brazilian context, especially due to the fact that delay in fertility is a recent process (Lima and Myrskylä, 2013) it is important to estimate and analyze the sandwich generation and discuss its determinants and possible implications. In addition to that, low fertility may decrease the time women spend taking care of small children, so, it is important to consider how the average women are spending time in this situation.

The aging process results in a verticalization of the family structure in the same sense of the verticalization of the age structure in population, meaning that people are sharing time of their lives with individuals of different age groups for a longer time. This process reinforces the importance of considering multigenerational family bonds in family (Bengtson 2001; Mare 2011; Medeiros and Osório, 2013). This is the case of sandwich women, since we could observe at least three generations alive at the same time, and normally women are responsible, or devote more time, caring for children and elderly.

Different measures have being used to estimate the burden of care and economic resources the aging process, such as the dependence ratios, assuming the demographic life cycle context (Lee, 2003; Lee and Mason, 2011), in which children and elderly are considered dependents, because they usually consume more than they produce, while adults are the ones who are able to produce more than consume, making them able to support the dependent members of the population. This is an aggregate measure that does not show to whom the burden of care may be increasing. However, the sandwich generation is another way to analyze the effect of the demographic transition considering the family dynamics and not only the in an economic perspective (Wachter, 1997; Mason and Zagheni, 2014).

The definition of sandwich generation usually includes only middle-aged women, because they are more likely to provide the care for both dependent generations (Craig and Mullan, 2011; Grundy and Henretta, 2006). Most authors use an age range between

45 to 54 years old, as the age range for children and parents varies more. Soldo (1996) considered parents in need for care the one typically after age 75 years old. For Mason and Zagheni (2014), a sandwich generation has a coexistence with children under the age of five and one or more parents less than five years before death. For example, Watkins, Menken, and Bongaarts (1987) used parents aged 65 and over than with children under age 18 in their macro-simulation.

Most studies have focused on United States or have a worldwide perspective comparing different regions (Mason and Zagheni 2014; Grundy and Henretta, 2006). However, in their analysis, Mason and Zagheni (2014) only considered fertility (not distinguished by marriage status) and mortality age schedules, as they did not have marriage information for all countries in their analysis. In this paper, we focus on Brazil, since it is a country with a rapid decrease in fertility but a late delay in fertility age profile, different from many places that have being analyzed in other research. Also, Brazil is undergoing a rapid demographic change and is marked by significant public transfers to the elderly, but has also an important tradition in family support. Given these characteristic the results may be quite different from what is observed in the United States and other more developed economies, since the time mothers would spend with small children tend to decrease (due to fertility decline) and less likely they tend to be sandwich generation, because fertility schedule is young. In this sense, the sandwich generation would be a rare case of middle-aged women in Brazil, who would be more likely to have adult children (some may be in need for care) at the same of elderly parents. With the increasing delay in fertility, we may start to observe some effect in recent years, especially on how long women spend as a sandwich generation.

Finally, it is worth highlighting that the concept of sandwich generation is based on need of care, however, the amount of dedicated care middle age women perform is unknown because there are no data on time-use transfers in Brazil to perform an analysis similar to Zagheni and Zannella (2013). For our knowledge, Correa et al. (2011) is one of the few papers that try to incorporate a more qualified measure of support across family members.

In this paper, we used SOCSIM microsimulation program in order to assess the possibilities of explore intergenerational relationships in Brazil in the last century and forecast sandwich trends to some decades ahead. Macro and micro simulations are the

common methods for analyzing this phenomenon due to the lack of data about family members that live outside the household, in this case is particularly important to have information on the parents who live in a different household.

2. THE CONCEPTS OF DEPENDENCY AND THE SANDWICH GENERATION

Dependency is defined by life periods that one needs be cared by others, infancy and old-age are the stages in life that people do not produce enough to consume, so they are totally or partially supported by adults, the ones that usually produce more than consume (or by the state or savings). The most common measure is the dependency ratio, defined as the number of people under age 14 and above age 65 in relation to the number of individuals between the ages of 15 and 64 years old. One can also use more specific measures, as young dependency ratios considers only people under age 15 and old dependency ratios considers only those above age 65.

Dependency ratios are very limited since everyone, regardless of having or not a child (or an elderly parent alive), is considered equally in this estimate. (Soldo 1996; Mason & Zagheni 2014). More detailed measures, which take into consumption and labor income profile, also failed to incorporate time allocation and other measures of support. We argue, as others, that sandwich generation ratios might be a more complete and informative measure of familial dependency.

The sandwich generation is usually defined by middle age population, especially women, who have a dependent child (under 18 years old) and a living parent. It is assumed that both would compete for care and pressure the sandwiched generation. Decline and delay in fertility as well as increase longevity play an important role in defining the duration and strength of the sandwich period. Longer lives indicate that people spend more time as child, as a parent and increases the chances of having a living parent and grandparent. The decline in fertility may reduce the time people spend raising a young child, however the delay in fertility may postpone this period, which is more likely to happen at the same time that people have an elderly parent to be taken care. In general, today, the elderly are healthier and the overlap may not occur as expected – since they might demand less care than before. Therefore, it may be more common to find middle-aged people with young adult children (who may still need some support) and elderly parents who may or may not need support. One additional point to

considered is the possible downward transfer from the elderly generation to the middle and to the young generations, this transfer can be monetary or in a form of service, and would reduce the impact to the sandwich generation.

Watkins, Menken, and Bongaarts (1987) attempted to verify whether longer life means that cohorts are spending more years in different statuses, child, spouse, or parent. The main result is that despite declining fertility and higher divorce rates, women in the 1960 and 1980 cohorts spent more years in marriage and as parents than did earlier generations. They also spent more years as children of aged parents. However, much of the potential offered by longer life spans has not been achieved.

Because of the lack of data on family members living outside the household and information on inter-household transfers among family members, other methods such as microsimulation models are necessary. Mason and Zagheni (2014) used United Nation Projections and microssimulation to investigate the sandwich generation trend in a worldwide perspective. The main results are a global downward trend in simultaneous responsibilities of parents towards younger and older generations. They find that grandparents are expected to be increasingly squeezed between young grandchildren and their own elderly parents. The results from Mason and Zagheni (2014) also suggest that grandparents could expect to play an important role in care and support. They also suggest that it is possible to observe a rise in the overlap of people with their grandparents.

Soldo (1996) found that three-generation families are common and are, actually, modal for middle-aged adults up to age 60. Therefore, considering a mean age at childbearing of 26 years old, since 1960, very little of the generational overlap occurs at a point when both the elderly parents and offspring of middle-aged adults are likely to need care. Rather, the timing of parent care is more likely to coincide to the time one has young adult children. Moreover, at a point in the life cycle of middle-aged adult children when elderly parents or in-laws are at greatest risk for frailty (typically after age 75), the generation in the middle is more likely to be juggling care commitments to grandchildren than to their own very young children (Soldo, 1996).

3. SANDWICH GENERATION: GENERATION, GENDER, AND CARE

The main discussion about the sandwich generation is towards the need of care by two intensive caring needing periods in life and most of the discussion concentrates on the role of women, because she is the one who usually assumes the care service in the family (McGarry and Schoeni, 1997; Grundy and Henretta, 2006; Cheng, et al., 2013; Correa, et al., 2011). However, the care can take different forms and be permanent or temporary, such as, time (or services), financial and providing space (co-residence).

Hogan et al. (1993) highlighted that having a daughter is key to receiving assistance in old age. Nevertheless, sons are more likely to give financial or household assistance to their parents. Therefore, without qualifying which care is provided, it is hard to conclude the gender that matters more. In addition, it is worth highlighting that there is wide variation across countries on who is responsible or should care for the elderly parents. For example, in China, it is the son who takes care of the parents and the care is mostly provided by the only child, followed by the eldest one. The youngest sons provided the least care among all the sons (Zuo and Li, 2013). In the United States and Brazil, different studies concluded that women, even in laws, play an important role in providing care for the elderly (Correa, et al., 2011; Bianchi, 2011). Researchers have also found little financial transfer to parents. Indeed, elderly parents appear far more likely to give financial help to children and grandchildren than to receive it (Soldo and Hill, 1993).

Hogan et al. (1993) highlighted that one-half of Americans do not routinely engage in giving or receiving relationships with their parents and only about one in 10 are engaged in extensive exchange relationships. Parents are assisted more often in situations of poor health, and more often receive assistance when they have young children. Assistance in time of need is not uniform and is rarely extensive. Intergenerational assistance is constrained by family structure and the needs and resources of each generation. African-Americans are consistently lesser likely, than whites, to be involved in intergenerational assistance. In each generation, men receive as much altruistic support as women; higher levels of giving and receiving of aid among American women are due to their greater involvement in exchange.

Another important aspect of parental care is the distribution of care among siblings, most middle-aged children have siblings, giving the fact that most of middle-

aged people have brothers or sisters, so the care can be split not burden anyone (Soldo 1996; Henretta, et al., 2011). In this sense, Soldo (1996) claims that the image of middle-aged adults balancing parent care duties with childcare duties is clearly an inappropriate rendering of mid-life. The author argues that a full account of cross pressures at mid-life requires data and analyses, which recognize alternative transfer currencies, siblings as potential substitute helpers, and obligations to both own kin and kin by marriage. Henretta, et al. (2011) also show that family characteristics and elderly profile are important variables in explaining variations across families on how care is allocated. Because there is a natural life-cycle rhythm to giving and receiving transfers, panel data are needed to evaluate how reciprocities (either bequests from parents or assistance later in life from own children) offset the sheer volume of claims on mid-life resources (McGarry, 1998).

Moreover, the provided support is part of an exchange system, in which, parents and children provide and receive care (Hogan et al., 1993; McGarry, 1998). It is a much more active process than a static and passive one. Hogan et al. (1993) also argues that the most appropriate focus for research on intergenerational support is on lineages that contain grandchildren. That is a similar conclusion of Soldo (1996), Mason and Zagheni (2014): more important than the sandwich generation may be the role of grandmothers in the care of grandchildren, especially in developing economies.

4. DATA AND METHODS

This analysis uses the SOCSIM (social simulation) demographic microsimulation model, originally developed by Gilbert and Hammel (1966) and further developed by Hammel, Wachter and Peter Laslett (see Hammel, Wachter and Laslett 1978; Hammel, Mason and Wachter 1990), in which an initial population is subject to appropriate rates of fertility, mortality and nuptiality (including divorce). Documentation about SOCSIM is available at lab.demog.berkeley.edu/socsim.

SOCSIM simulation defines an initial population of notional individuals having some desired sex/age distribution, for example, a stable population structure from any standard model life table. It is a close model (Wachter, 1987) so that partners have to be found within the existing simulation population (Murphy, 2004). With a closed model, a full set of kinship links is constructed over time as the individuals marry and

procreate, so that any kinship relationship through blood or marriage may be traced through living and/or dead kin.

The model starts with an initial population that evolves under the given rates of fertility, mortality and nuptiality. The initial population in this exercise correspond to an abstract population of 3014 individuals. It is important to mention that the initial population used in the simulations does not compromise our analysis, since our main interest is to test the effects of vital and marriage rates on the sandwich generation in Brazil.

Initially, we simulate the population over 35 years, from 1980 to 2015. The choice of this starting period is justified by the onset of period fertility decline could be observed between the periods from 1965-75 and 1975-80, the precise period when socioeconomic modernization variables are likely to explain a great deal of the fertility differences (Martine, 1996). Before this period, the country presented a quasi-stable population structure with significant mortality decline between the period of 1940-60 and fertility schedule constant at very high levels (Carvalho and Wong, 2008). We also use the rates to simulate population conditions and sandwich generation trends and implications from 1900 to 2020. The results presented here are preliminary since they are based on a series of rates from 1980 to 2010 only.

We also compare three different scenarios to analyze the situation in Brazil:

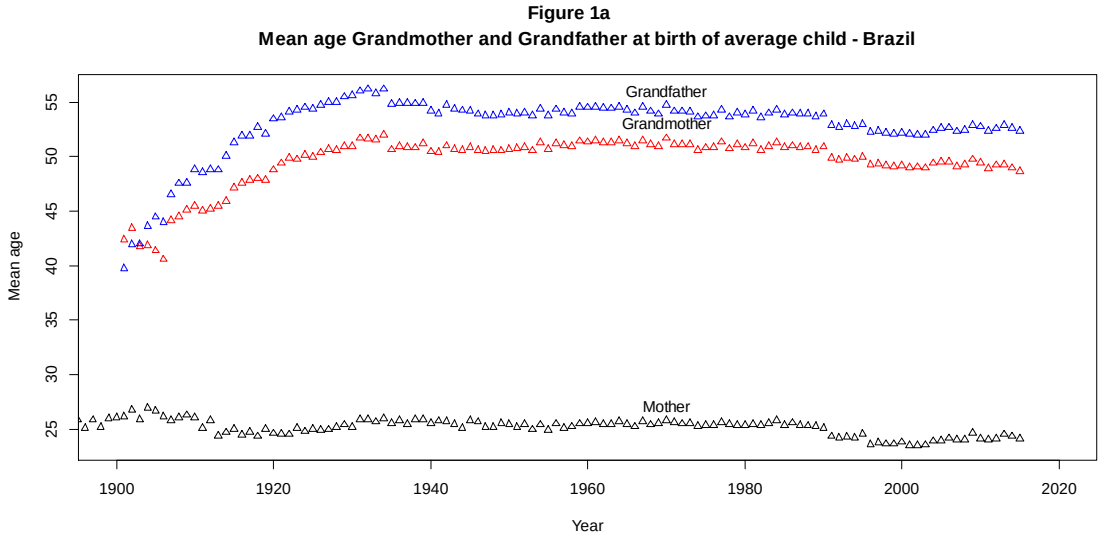
1) Based on Brazilian fertility and mortality rates from 1980-2010, and marriage rates from 2000;
2) Based on Brazilian fertility and mortality rates from 1980-2010 and US marriage rates from 1980-90 (Stockmayer, 2004);
3) Brazilian fertility constant at levels of 1980, mortality from 1980-2010 and marriage rates from 2000.

The comparison between scenarios 1) and 2) measures the impact of marriage market on the child-mother-grandparent relations, while 1) and 3) analyzes the effect of fertility changes in the sandwich generation. The effects on mortality change are absent in this study, since we do not have mortality information available for years before 1980 (but we are working on constructing a series from 1920 on).

5. RESULTS

We first investigate the average age at childbearing and the expected years of life remaining at the birth of a grandchild. This first step aims to study how changes in fertility and mortality affects the variation in these ages over time in Brazil. We estimate the average ages ignoring changes in life-table rates overtime and the distribution of maternal age at birth. From our simulated population, we need to identify, for each month of simulation, the data when the mother had a child and link her information to her parents to identify when they became grandparents.

Figure 1: Average age of mother, grandmother and grandfather at birth of average child – Brazil, 1900 -2020 – (based on three scenarios).



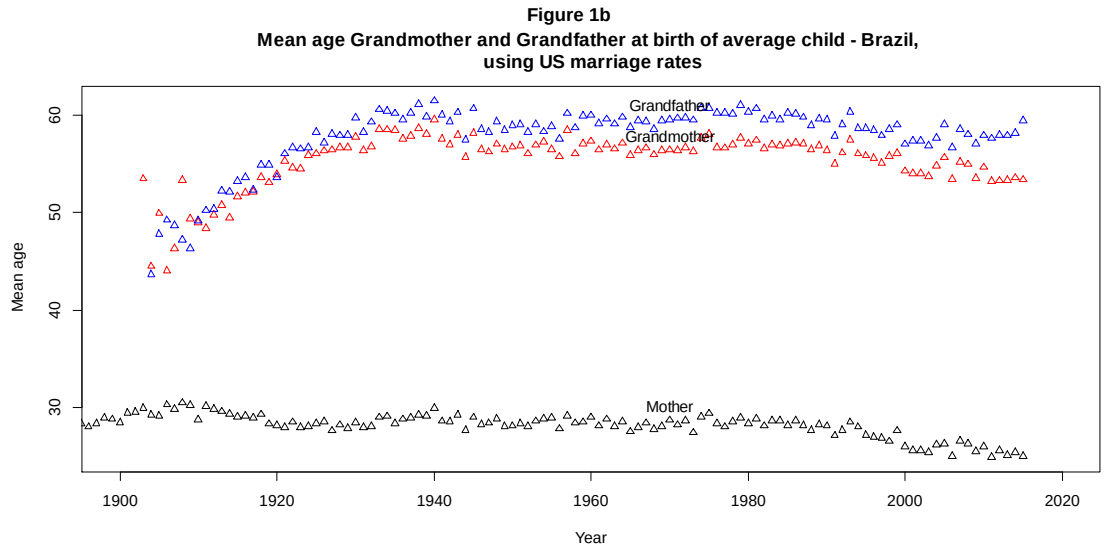
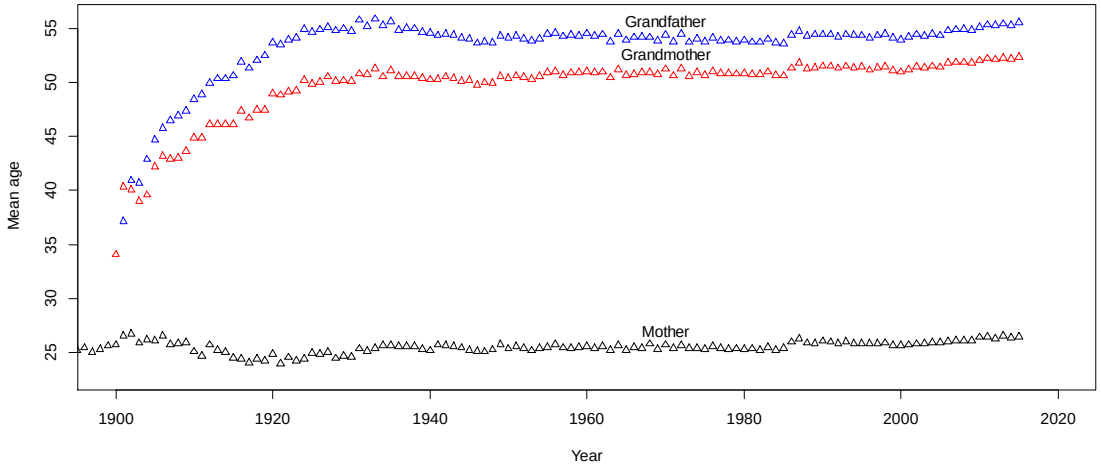


Figure 1c
Mean age Grandmother and Grandfather at birth of average child - Brazil
Constant Fertility 1980



Source: Brazilian Micro censuses data 1980-2010 and Stockmayer (2004). Socsim microsimulations.

Figure 1 shows the average age of motherhood and the mean age in which individuals became grandmothers and grandparents for each of the three scenarios. The results indicate that mean age at childbearing has not change much overtime in Brazil. We estimate an age ranging from 25 to 30 years old from 1900 to 2015. In the third scenario, with fertility rates constant as 1980, we observe a slightly raise in the average age of childbearing for recent periods.

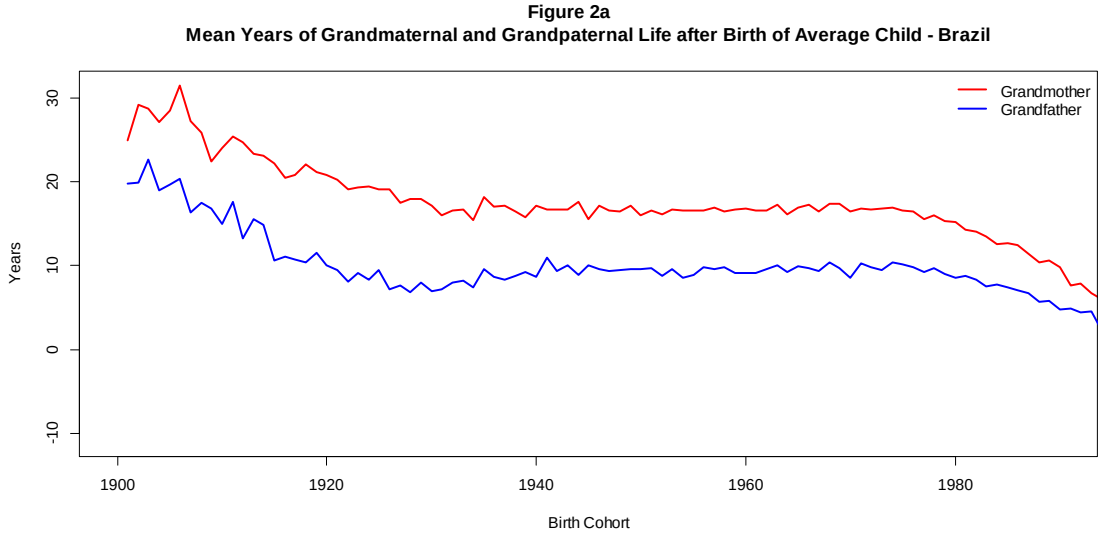
In the first two scenarios, that include decline rates and postponing of fertility in Brazil, we observed a small decline in the average age of motherhood and an increase in the age of becoming a grandparent, in this sense the age difference between mothers and grandmothers has increased. The average age takes into account all births, since in the past Brazilian women tend to have several children until very late one could expect ages greater than in more recent period when they have fewer children, but at older ages. In the final version, we will provide estimates of the average age when first becoming a mother and grandmother.

The age of becoming a grandparent increase rapidly from 1900 to 1940 and then stayed almost constant until 2000, in the most recent periods we estimate an increase in the average age. In any scenario, average age of becoming a grandparent is about 5 years greater than becoming a grandmother reflecting age difference at wedlock.

Figure 2 shows the expected years of life remaining at birth of grandchild, estimated as the average age of woman, when they became mother, at the death of her grandparent. The average time as a grandmother was high in the past and declined until

1920, after this period the length of time as grandmother stayed almost constant. In more recent years (after 1980), the average time as a grandparent reduced to 20 years for females and 10 years for males. These results indicate changes in both level and shape of the fertility curve. As women have less children, postponing the age of first births (Lima and Myrskylä, 2013), their mother become grandmothers at a later age and spend, on average, less time in three generational families. Mortality differentials by sex explained the different between time as grandparent for males and females.

Figure 2: Expected years of life remaining at birth of grandchild – Brazil, 1900-2000 (three scenarios).



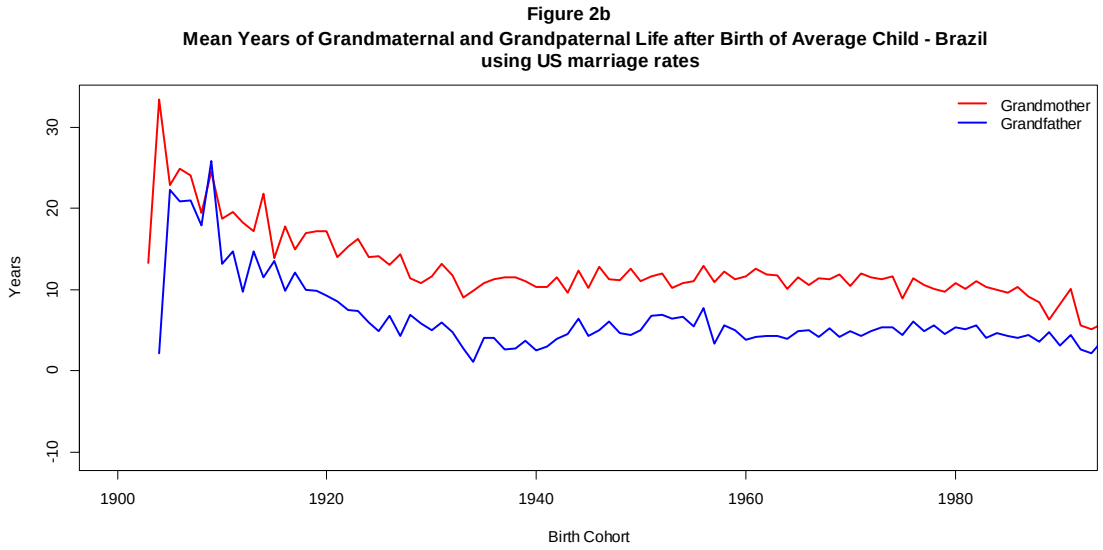
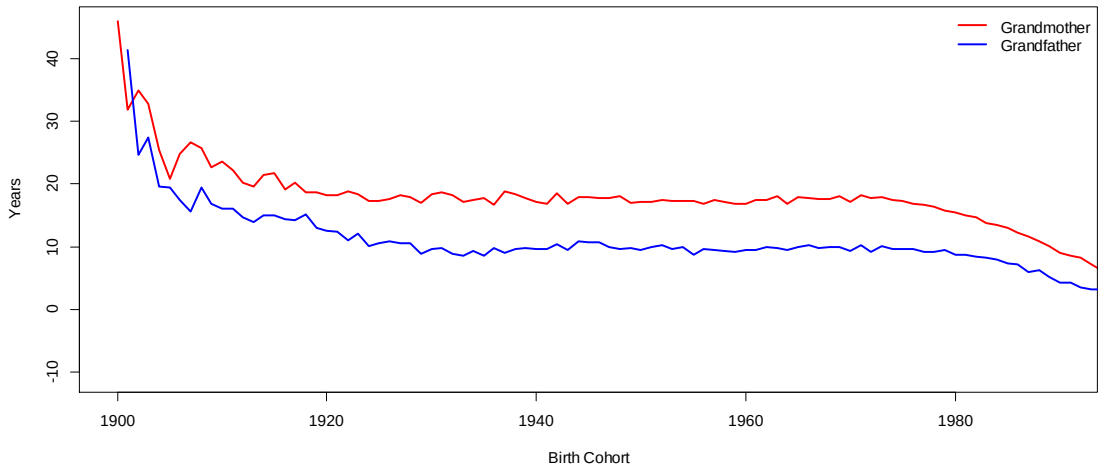


Figure 2c
Mean Years of Grandmaternal and Grandpaternal Life after Birth of Average Child - Brazil
Constant Fertility 1980

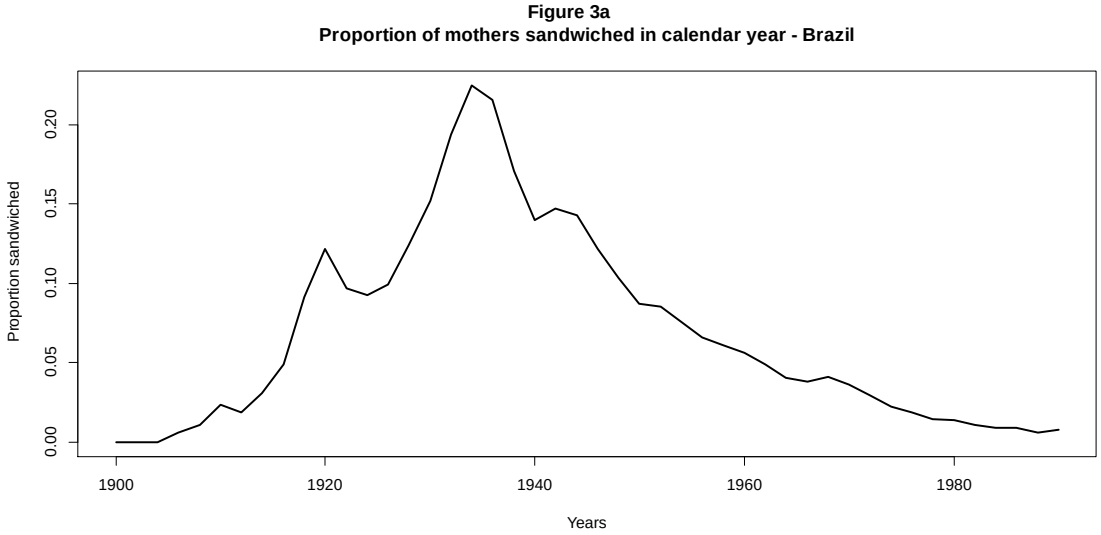


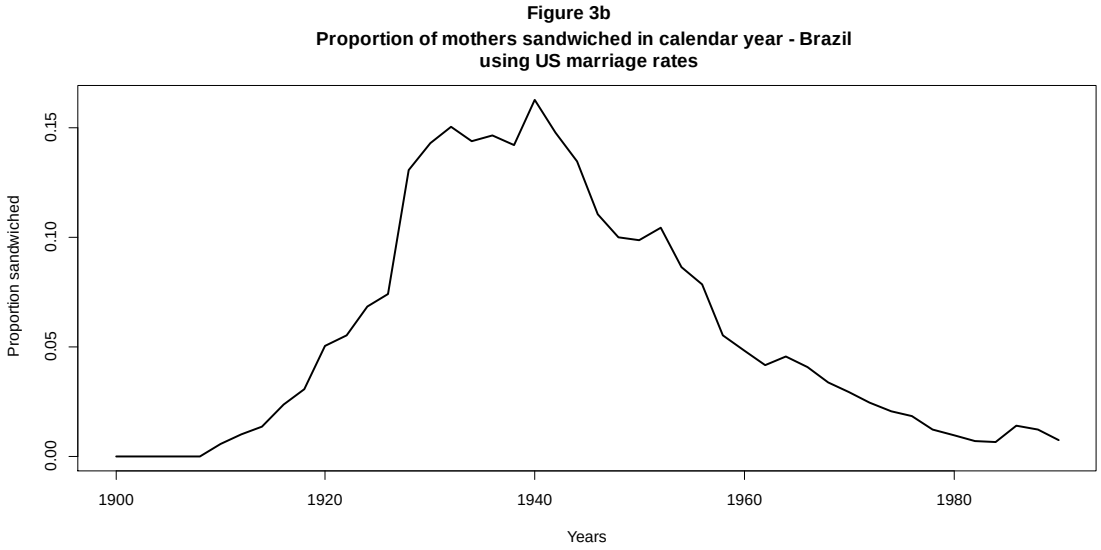
Source: Brazilian Micro censuses data 1980-2010 and Stockmayer (2004). Socsim microsimulations.

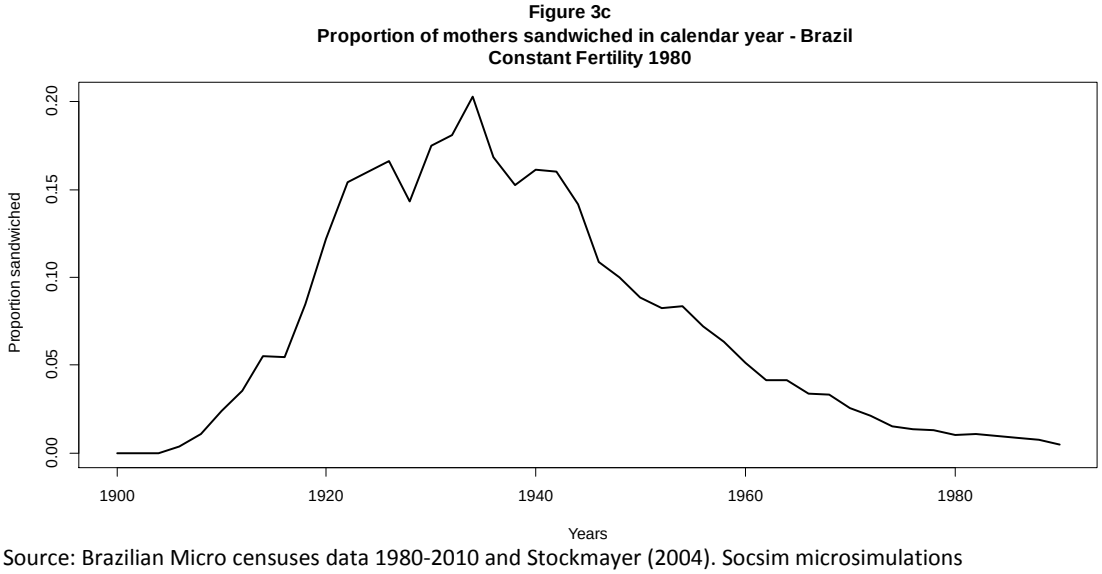
In Figure 3, we show the sandwich generation from the perspective of the child. We tabulate all children age less than 10 years old who had a maternal grandmother five or less years from death in each year. We follow Mason and Zagheni (2014) and use the time until death (five or fewer years) as a measure of health conditions and proxy of grandmothers in need for care from her adult children. We then estimated the proportion of sandwiched mothers, in each year, by taking into account all the women alive and 18 years old and above in January of that year and who are or will be mothers and are younger than 60 years of age.

Trends in proportion of mothers sandwiched in Brazil follow a pattern very close to the demographic transition. As mortality decline and fertility stays high (1920 to 1960) the proportion of sandwiched women increases and remains very high. In this period, women were still having many children over their life cycle, while changes in mortality imply that probability of surviving to older ages were increasing. As fertility declines, and for the more recent cohorts are delay (Lima and Myrskylä, 2013), combined with continuous changes in the mortality age profile, the percentage of women taking care of young children with parents in need of care reduces. The reduction in time squeeze of mothers observed in Brazil is similar to the estimates provided by Mason and Zagheni (2014).

Figure 3: Proportion of mothers sandwiched in calendar year – Brazil, 1900-2000 (three scenarios). Measured as women with children less than 10 years old and mother of five or fewer years from death in a particular year.







Source: Brazilian Micro censuses data 1980-2010 and Stockmayer (2004). Socsim microsimulations

6. DISCUSSION AND CONCLUSION

Population aging in Brazil raises concerns about care for the elderly, who are, in general, more dependent from aids from other individuals. At the same, a large literature has brought attention to the allocation of time by women to their children and elderly parents. Rapid demographic change in developing countries combined to a less developed social support system has brought to attention how this situation could affect family relations and economic outcomes.

We show that the average time women spent sandwiched by elderly parents and young children are declining over time in Brazil. This indicates that one should, in fact, investigate the possible impacts of demographic change to the grandmothers would might be important as resource persons to young children (their grandchild) and their own parents who might be still alive. Therefore, instead of a sandwich generation of mothers, one might be observing a sandwich generation of grandmothers and grandparents. These results is in line with intergenerational transfer studies (Lee and Mason, 2011) that show that elderly individuals make net transfers to younger individuals in a series of countries.

This paper contributes to better understanding family relations in Brazil and the weight of care provided by women and other individuals. More studies in this area are of great importance, because they can be a source of positive or negative externalities to redistribute resources and react to the policies implemented. Families can also be criteria focusing policies and influence, or be influenced by the policies implemented. In this work, we take care to contribute to a better understanding of this reality.

The preliminary analysis presented in this paper is limited by the data available. Thus, we are now working on simulating sandwich generation using longer series of mortality and fertility rates (1920-2010) and project rates from the national statistics office and UN population projections, in order to study future trends in the sandwich generation.

We are also exploring alternative sources to estimate marriage rates, mostly based on Markov Chains. Future work might also consider analyzing the sandwich generation of grandmothers, as they could help providing care for their grandchildren and surviving parents.

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