

Assessing the impact of migrations on Fertility in Ouagadougou, Burkina Faso

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Background

In a previous paper (Rossier, Lankoande, Ortiz, 2011), large fertility differentials between formal and informal neighborhoods in Ouagadougou were shown, based on the Ouagadougou Health and Demographic Surveillance System data. The Total Fertility Rate (TFR) was as low as 1.8 children per woman in formal areas, as against 3.6 in informal areas. Rossier et al. (2011) looked for plausible reasons for this large discrepancy between parts of the city of Ouagadougou. No significant difference was found in unmet needs for contraception, using the classical definition. Compositional effects were present: women living in informal areas are less educated, they come more frequently from the countryside, they are poorer, but these compositional effects are far from being sufficient to explain the large fertility differences between formal and informal areas. Indeed, poorer, less educated women and women coming from rural areas have higher fertility intentions, but the difference in intentions was only 0.5 children per woman when comparing formal and informal areas.

Migration to the city of Ouagadougou and, among inhabitants of the city, residential mobility from formal to informal areas, may be highly related to fertility behavior. Following e.g. Schoorl (1995), we know that migrants' TFR may reflect selective migration, disruption of the process of family formation or, inversely, marriage migration, and adaptation or assimilation after some years. Some women migrating to the city may be less willing to become pregnant than women staying in the countryside, while others may move to the city in order to marry or to live with their spouse ; within the city, women may move to informal settlements when they marry and need more space to have and raise children.

The very low fertility level in formal areas – compared to African standards and to the desired number of children may thus be due, at least partially, to downward bias in the TFR due to selective migrations.

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Method

The Total Fertility Rate assumes that each age group is homogenous in terms of fertility behavior. Furthermore, the sum of age-specific fertility rates within the “fictitious cohort” model is consistent only if the fiction is sensible. In a capital city like Ouagadougou, migrations into the city, migrations out of the city and residential moves within the city are frequent, and may be strongly related to fertility behavior. Two phenomena are likely to occur, which both lead to a downward bias in the total fertility rate (TFR), leading to low fertility estimate in the capital city and, more specifically, in formal neighborhoods. First, recent immigrants may exhibit low fertility rates during some years after the arrival in the city, because of temporary economic frailty or instability (disruption hypothesis). At all ages, the share of recent immigrants is important, so that the age-specific rates are deflated by this large proportion of recent immigrants. A method correcting such biases has been proposed by Toulemon (2004; 2006) for immigrants’ fertility in France, accounting for the fact that immigrants arrive only once in the country. While the (age-based) TFR of immigrants was 0.72 children higher than natives’ TFR, an index taking into account duration since arrival led to an overall difference of 0.46 children (-0.09 before migration and 0.55 after migration, compared to natives). This bias may induce a downward bias in TFR, at least for formal areas of the city. Women moving directly to informal areas from the countryside do so foremost for marriage related reasons, as opposed to women moving to formal areas, who come for work or to pursue their studies (Stoner et al. 2012), which creates a source of upward bias to fertility in informal areas. Second, if women leave the city when they want to marry and have a child, age-specific fertility rates are estimated on a subgroup which is selected for their low fertility, so that adding the rates within the fictitious cohort assumption is not relevant. More precisely, the continuity hypothesis assumes that women who left the city would have had the same fertility that those who stayed in the city, if they did not leave. If women who stay delay their births and women who leave get married and catch up for this delay (children being born out from the city), this assumption does not hold. If, within their life, women preferably have their children before coming to the capital city and after they left the city, the TFR measures the fertility of a group of women spending years 15-50 in the city, which does not correspond to any concrete group of women. In order to correct for this bias, it is necessary to estimate the fertility that women who left would have had, if they had stayed in the city.

Similar bias may occur within the city, if selective migrations are related to fertility. This is the case in Ouagadougou, where married couples are much more frequent in informal neighborhoods than in formal neighborhoods (Rossier et al., 2011), because of internal migrations within the city, from formal to informal neighborhoods, related to couple formation, marriage and childbearing.

In order to accurately estimate the fertility decline taking place in the capital of Burkina Faso, we propose a model explicitly taking the interaction between fertility and migration into account. This model allows us checking whether the observed levels of the TFR in formal and informal areas must be corrected from selective migrations, and measuring total fertility with an unbiased index.

Data

The Ouagadougou Health and Demographic Surveillance System (Ouaga HDSS), (*Observatoire de Population de Ouagadougou*, OPO in French) has been settled in 2008, in order to promote efficient social and health programs, adapted to the needs of the inhabitants (Rossier et al., 2012; for a French presentation of the HDSS, see <http://www.issp.bf/OPO/>). Some 80,000 individuals have been

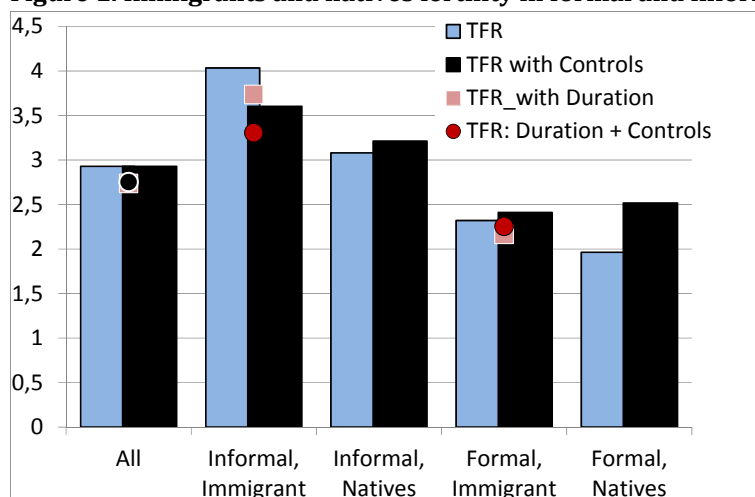
included in the HDSS, starting from a general census of five areas in the North of the city of Ouagadougou in 2008 (two formal neighborhoods, and three informal neighborhoods). Each year a survey is conducted on vital events (among which pregnancies and births) occurring to the population under surveillance. A specific retrospective survey on all previous births on a sample of 8,000 women has been taken in 2012. The Ouaga HDSS is part of the INDEPTH network; with the Nairobi center, it is the only entirely urban African site within INDEPTH.

Migration data include information of time of arrival in the dwelling, time of arrival in the city, and location of the previous dwelling (administrative sector in Ouagadougou, province if outside of Ouagadougou), allowing for an estimation of fertility-related migrations within the city.

Preliminary results

A preliminary analysis has been made on the immigrants to the city. TFR is estimated in both types of settlements, with and without controls (Ethnic group, Education, Standard of living, Religion, and Marital status). Taking into account the bias due to migration into the city reduces immigrants' fertility in informal areas. In formal areas the correction is much smaller, as immigration to formal areas is not so deeply related to fertility (Figure 1).

Figure 1. Immigrants and natives fertility in formal and informal areas

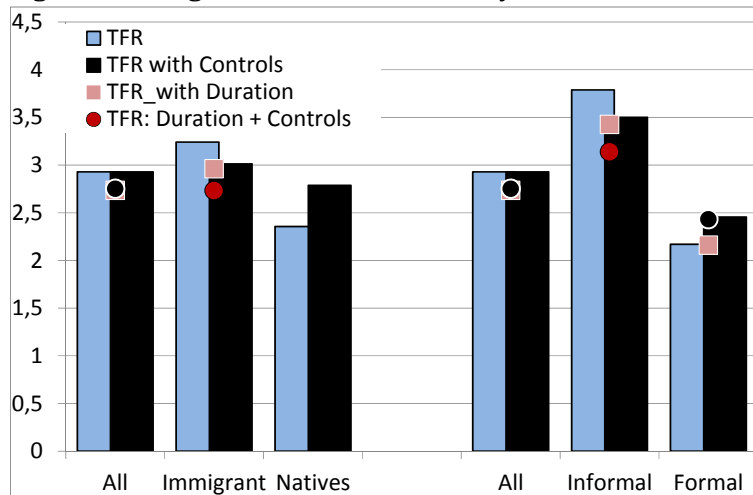


In order to estimate the impact of internal migrations within the city, a simulation of fertility-related migrations from formal to informal neighborhoods was performed, based on three assumptions: 1) The immigrants moving to formal areas have the same fertility than the natives in formal areas; 2) Immigrants to Informal areas have the same ultimate fertility than the natives living in informal areas; 3) In informal areas, immigrants and movers (from formal areas) have a higher fertility during ten years.

Assuming that the movers to Informal areas are 25% of the population of the city (19% immigrants and 6% natives), we found that fertility (TFR with controls) in informal areas becomes much lower (from 3.50 to 3.14), while fertility in formal areas remains unchanged: 2.43 (Figure 2). The next step will be to accurately estimate internal moves within the city, from information based on previous place of residence, in order to accurately estimate the impact of internal moves. The paper will also consider the strong heterogeneity of immigrants (in terms of Place of birth, education, standard of

living). Results are consistent with the proactive policy of “formalization” of areas (water, electricity, paved streets), and land speculation occurring in the city.

Figure 2. Immigrants and natives fertility in formal and informal areas



References

Rossier C., B. Lankoande, Ortiz I., 2011, “Fertility differentials between formal and informal neighborhoods in Ouagadougou ». Presented at the Sixth African Population Conference, Union for African Population Studies, Ouagadougou, Burkina Faso, 5-9 December. Session 80: Fertility transition in Africa: case studies. <http://uaps2011.princeton.edu/abstracts/110793>

Rossier Clémentine, Soura Abdramane, Baya Baya, and the OPO group. 2012. “The Ouagadougou Health and Demographic Surveillance System”, *International Journal of Epidemiology*; doi: 10.1093/ije/dys090

Schoorl, Jeanette, 1995. “Fertility trends of immigrant populations”, in S. Voets, J. Schoorl and B. de Bruijn (Eds.), *The Demographic Consequences of International Migration*. Proceedings of the symposium, NIAS, Wasenaar, 27–29 September 1990. Report No. 44, The Hague: NIDI, pp: 97–121.

Toulemon Laurent, 2004. “Fertility among immigrant women: new data, a new approach”, *Population and Societies*, n° 400, 4 p. http://www.ined.fr/englishversion/publications/pop_et_soc/pesa400.pdf.

Toulemon Laurent, 2006, “Fertility Among Immigrant Women and Men in France: A New Approach for New Data”, Population Association of American 2006 Annual Meeting, Los Angeles, California, March 30-April 1, 2006. Session 102: New Ways of Looking at Fertility Measurement Challenges, 19 pages. <http://paa2006.princeton.edu/abstracts/61103>