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Title: Selective Attrition and Fertility Behavior After Exogenous (Weather) Shocks.

The last decade has seen a growing interest among researchers and policymakers on the long-term impacts of natural disasters on outcomes like educational attainment, anthropometric indicators, marriage stability, income, employment status, etc. Related literature has also tried to assess whether those shocks tend to affect fertility and birth rates.

Yet, to my current knowledge less than a handful of papers have tried to assess whether some environmental shocks affect fertility behavior *differently* for certain families. In other words, the current literature has not fully addressed the heterogeneity on the effects on fertility behavior due to natural disasters. Understanding the expected differentiated effects of catastrophes like typhoons on fertility behavior is important for many reasons. First, it is relevant to economists and policymakers in general since it could provide insights into how fertility decisions are affected by changes in health status or in future income. It is also important for policymakers working in areas that regularly experience similar environmental shocks, like most of South Asia and Caribbean countries. Finally, a few recent papers testing the effects of exposure to shocks while *in-utero* have used "children conceived after a disaster" as the control group when assessing long-term effects; if it is the case that poorer and less educated families are less likely to conceive post-shock, then that effect would be overestimated because the control group is positively selected. This can actually help explain why the current literature assessing effects while *in utero* has found mixed evidence for similar type of shocks.

The central premise for this essay is that typhoons or hurricanes result not only in an immediate income reduction, but also in a reduction of the expected future income, especially in developing countries. After severe typhoons, some family members lose their jobs or other preexisting sources of income. In societies without proper safety nets, and whose governments have limited presence and constrained resources, families face increased levels of uncertainty about their income for many months and, in some cases, until the next crop season. This leads to the hypothesis that some families, presumably the most vulnerable ones, cancel or postpone their fertility plans until the uncertainty declines to pre-typhoon levels.

Thus, this paper aims to help understand fertility behavior under income uncertainty while adding to the "fetal origins" literature by determining whether such exogenous shock caused the most affected or vulnerable families to temporarily postpone or cancel their fertility plans. In particular, this study focuses on the severe typhoon season that affected the Philippines in 1984, and relies on official census data (10% sample).

The empirical methodology includes, first, a long-term trend analysis (a slight variation of Almond's cohort analysis in his JPE's paper in influenza) that proves useful to obtain a good preliminary diagnosis of the issue to be analyzed. Second, and more importantly, a difference-in-difference-in-difference approach is included, coupled with a matching (weighting) strategy for robustness purposes. Using the age of each person in a household, fertility histories are built for each family in the sample, so that the census data is transformed into a synthetic panel with data for more than 1 million families (around 6 million people) across almost two decades.

The census data contains detailed geographical information on birth and place of residence which, coupled with geocoded information provided by the NASA and the official

reports from the United Nations' Department of Humanitarian Affairs (UNDHA) and the Department of Disaster Relief Organization (UNDRO), allow for a very precise identification of the affected and the non-affected areas. Finally, with information on when the census was carried out and the days when the typhoons hit, it is possible to determine which children were conceived before or after the typhoons arrived.

Preliminary findings show that, in a typhoon's aftermath, less-educated households were more likely to postpone having children than better-educated households. Potential sources of bias and selection, including child-survival and internal migration, are addressed.