**Re-Examining the Fertility Assumptions in the UN's 2010 World Population Prospects: Intentions and Fertility Recovery in East Asia?**

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This paper is about the future of reproduction in the modern world and the validity or otherwise of the assumptions made about it in the most recent World Population Prospects of the United Nations Convergence of fertility is a core component of almost all international population projections. In particular, we consider the inclusion of the 'fertility recovery in East Asia' as a justification for the model.

In the 2008 *World Population Prospects*(*WPP*), it was held that this figure would be a TFR of 1.85(1). Once a country had reached this level, its fertility would stabilise and continue at this point. The 2008 projections assumed that almost all of the world would converge to 1.85 by 2050. In the 2010 *WPP*, however, a new theoretical structure uses Bayesian Hierarchical Modelling to allow each country to follow a defined pattern of fertility transition. Despite the probabilistic element in the modelling of fertility, all populations are constrained to converge upon the slightly higher TFR of 2.0 in the long run(2). By removing the 'floor' set in the 2008 *WPP below which TFR is not allowed to fall*, the 2010 projections 'allow' countries to fall much further and thus take much longer to complete their fertility transition (Figure 1)(3). However, it is important to examine this time series model in greater depth.

Figure 1: Model of fertility transition upon which the 2010 *WPP* is based
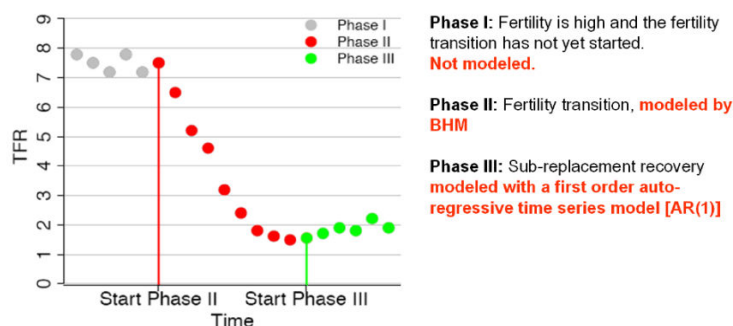
This time series model of fertility uses empirical data from countries in Europe and East Asian which fertility has increased from a sub-replacement level. The assumption that fertility will converge toward and fluctuate around replacement-level fertility in the long run is simply to suggest that a population stabilization within 3-4 generation allows enough time for this convergence to be manifested an apparently rather circular process of reasoning. (4)

These assumptions behind the exercise raise a number of fundamental questions, namely:

1. Have the countries upon which the model is based *actually* completed their fertility transition?
2. Will all fertility transitions be the same?
3. What is the empirical justification for an assumption of 'population stabilisation within 3-4 generations'? and what exactly does it mean? Vital rates? Age-structure? Population size?
4. What is the theoretical/empirical justification for the belief that the transition will have a defined end point, and that it will be at replacement fertility?

The final sentence in the assumptions above is crucial, with Goldstein *et al*.'s analysis of the 'end of lowest-low fertility' cited as evidence(5). Indeed, it is quite correct to observe that fertility has recovered in many European populations– not least due to the end of tempo distortion effects and increments from immigration, so that 'lowest-low fertility' has been almost entirely banished from the continent. Yet, in 2009, only one EU country had reached Replacement Rate (Ireland: 2.07) and eleven countries saw TFRs of below 1.5(6). Indeed, in the crisis year between 2008 and 2009 TFR *declined* by 0.13 in Latvia, and to a smaller degree in Spain, Portugal, Denmark, Hungary, Estonia, Austria, Luxembourg, Belgium, the UK, Germany, Malta and the Czech Republic and was almost static

elsewhere. In England and Wales, however it rose again in 2010 to 2.0, the highest since (1972). This suggests that the issues such as economic uncertainty can still play a role in unsettling the smooth move to the completion of fertility transition(7). The evidence from Europe, therefore, suggests that the fertility transition may not, after all, be complete.

What concerns us especially in this paper, however, is the inclusion of the 'fertility recovery in East Asia' as a justification for the model. Fertility in East Asia has fallen rapidly and remains at extremely low levels. Indeed, in addition to these nations, Goldstein et al. estimated that12 provinces of China, or *c.*470m people, were living under a regime of lowest low fertility (TFR <1.3) in 2000 (8). Furthermore, new corrected estimates from 2005 1% Inter-censal Survey suggest that this figure may have stabilized or possibly even increased (see Table 1). In this context, large Chinese urban centres (each with the population of medium-size European countries) are reporting fertility rates of around – or even below – 1.0(9).There are few signs of a major recovery in these fertility rates . Recently released results of China's 2010 population census report that China's population has grown by 5.84 percent from the last census in 2000. The average population increase rate over the last decade is only 0.57 per cent, which suggests a very low fertility at a level below 1.5.

National statistical offices and many scholars in East Asia appear to rather pessimistic regarding future change. The Japanese long term projections are based on stabilisation at TFR 1.26 by 2055 (LV: 1.06, HV: 1.55) (NIPSSR 2006); in Taiwan a gradual rise from current (0.940) to stabilisation at 1.30 by 2060 (CEPD-T 2010) while the Hong Kong authorities predict a *decline* from the current rate (1.04) to 0.94 by 2039 (HKCSD 2010). "Ultra-low fertility will remain in Hong Kong in the medium term unless … there is a significant fertility rebound [under similar prevailing conditions], or a substantial increase in the number of births out of wedlock, or a consistent rise in the proportion married' (10).

There is a large literature attempting to explain why fertility is so low in East Asia – including work-life balance, economic and social context, little reproduction outside of marriage, housing issues, cost and expectation of investment in education and easy access to contraception (see (11). Even in China, where the One Child Policy has been widely held responsible for current low levels of fertility in urban centres, an increasing number of studies have identified social and economic development, rather than policy, as being the key driver behind current rates (12).

However,the UN projections require these East Asian countries(perhaps taking Hong Kong as a proxy for some of the large Chinese urban centres) to have a significant, sustained turnaround in fertility with almost immediate effect (see Figure 2) – the precedents of which will be examined in the final paper. In this context, therefore, it is more urgent than ever to properly understand the rationale behind assuming a completed fertility transition at replacement-level.

Figure 2: Estimated and projected TFR, UP *WPP* 2010 medium assumption
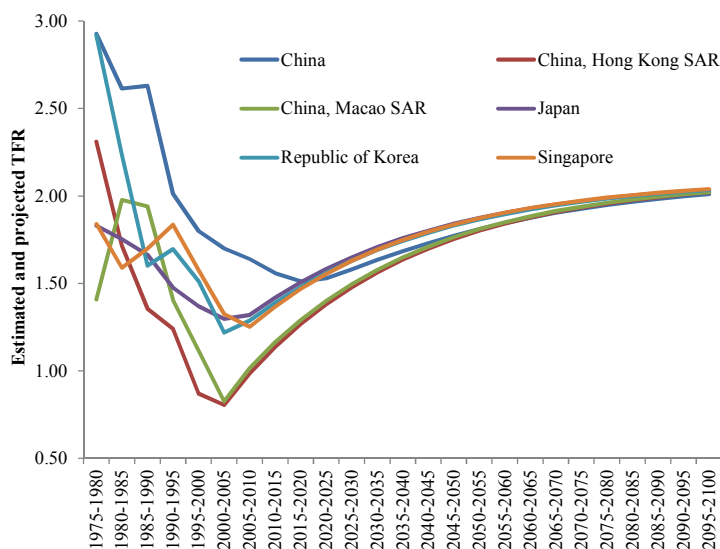
In the UN documentation, there is very little theoretical or empirical justification for a recovery of fertility to replacement level beyond the evidence cited above. One possible justification could be found in reported ideal family sizes. Despite declines in period fertility well below replacement level in many European countries, women and men

have consistently responded to surveys saying they would ideally like to have at least two or more children. For some authors this high ideal suggests that period fertility will eventually rise, if and when the tempo-depressing effects of delayed childbearing come to an end (13). More proactively, other studies have suggested that this higher ideal implies an unmet demand for children, which can be resolved primarily through policy interventions (14). The decline of reported fertility intentions in a few European countries below two was regarded as a serious challenge to that assumption (15).

In East Asia the observation that personal stated family size preference is around two(16-17), suggested a more positive outlook for future trajectories of fertility – not least because sociological theory sees changing ideals as a precursor to changing behaviour (18-20).

However, a number of recent studies have shown fertility intentions to be well below replacement level in China, under circumstances where people are allowed to have a second child and/or have been asked to reflect upon how many children they would like in the absence of any policy restrictions(9, 11, 21). The in-depth analysis of Jiangsu Province (21) emphasises the key role of social and economic development – rather than policy – in currently low fertility rates, and that the measurement of concrete fertility *intentions* suggests a significant recovery of fertility rates in the short-term is unlikely.

We will present the results of a systematic review of fertility intentions and reported ideal family size in China and attempt to place this in the broader East Asian context. We are currently at the half-way stage in the analysis (which will be completed by Christmas 2011). The provisional results (as displayed in Figure 3) reveal that the mean ideal family size was, indeed, below replacement level in urban areas since 1975, and has been falling steadily since then. By contrast, the ideal family size reported in rural areas is consistently around two. This could lend further support to the role of economic and social development as a key driver in shaping fertility desires. Indeed, in urban areas we find a very significant preference for one-child families across the entire period (Figure 4). The complete analysis will have provisional results of correlations between wealth, education and gender preference as well as an attempt to link up the reported ideal family sizes in the study areas with the outcome TFR.

Figure 3: Mean ideal family sizes in (a) urban and (b) rural China

(a)   **(b)**
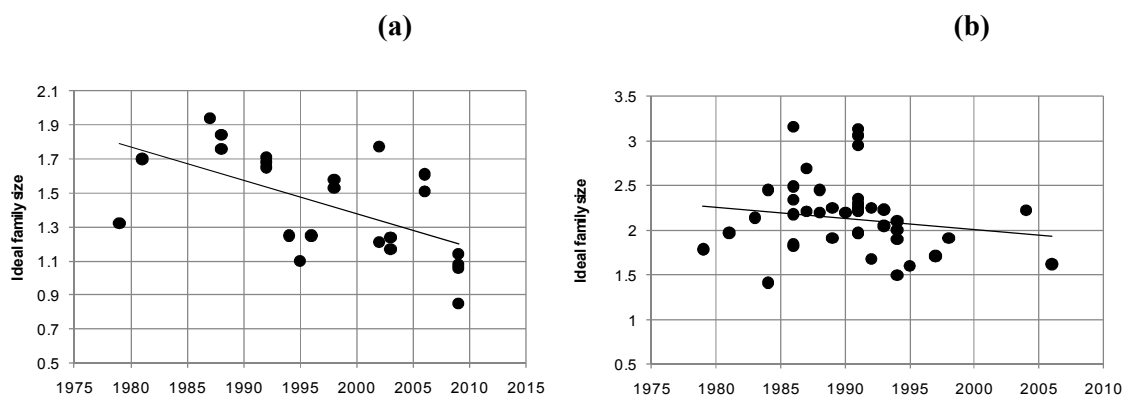
Figure 4: Preference for different family sizes
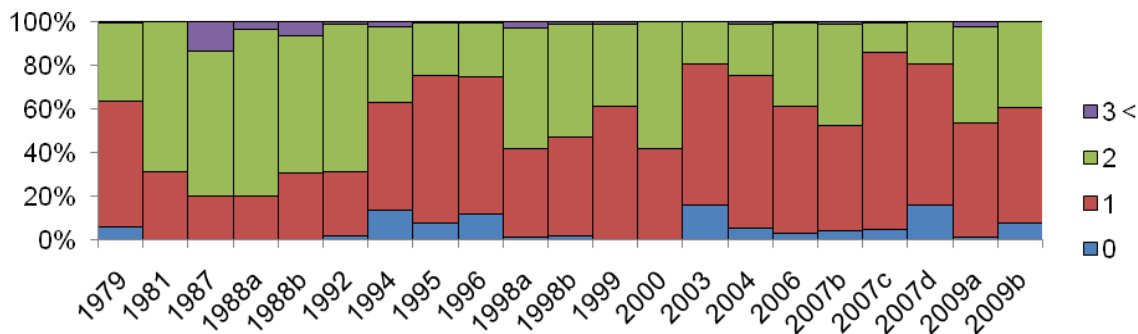
Of course, it is extremely difficult to disentangle the extent to which respondents are responding to what they perceive the surveyors want to hear – even when told to explicitly ignore any relevant policy restrictions (22). However, if this were to be overwhelming, then one might expect the rural ideal family sizes to be much lower than they are.

All of this creates somewhat of a paradox regarding the 'power' of reported ideal family sizes. In China, the reported ideal family sizes in the studies we examined seem to be strongly related to the pattern of TFR change, while this has not been the case at all in other parts of East Asia. Given the diminished role of Chinese policy as defined in recent studies, coupled with similar cultural, social and economic systems, it is difficult to explain the entire disparity of the 'gap' of fertility desires-realisation between China and East Asia. In other words, our evidence supports other studies which highlight the prevalence of low ideal family sizes, and suggest that the current economic and social circumstances are well reflected in the reported preference for, and actualisation of, small families in urban China.

Could it be that the introduction of the One Child Policy, or perhaps other the more inward-focussed nature of its culture and society may have 'freed' China from the influence of the two-child norm so associated with 20th century Western societies? From this, the universality of the 'two child norm' from which justification for an endpoint to fertility transition of TFR 2.0 *might* be derived could be readily challenged.

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