Monitoring Demographic Change: Theoretical Foundations

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1. Introduction

Monitoring demographic change involves the measurement, explanation and prediction of changes in the population. In most situations, patterns can be detected in the way populations change and these patterns can be described by trend models. Examples include the exponential and logistic growth models. Deviations from established patterns may represent noise or may indicate that a new pattern is emerging. It is difficult to detect new patterns when demographic change is studied at the level of the population (system level). Changes at the system level are a result of processes that are internal to the system. Consequently, the monitoring of the behaviour of a system must entail examining processes that are internal to the system, involving its components and the interactions between the components. Cohort analysis of demographic change is a typical example. A cohort is a group of people who have experienced a given life event during the same time in history. The prevailing historical context exhibits a long-term impact manifested in the similarity of choices made. As a result, cohorts differ in demographic behaviour and these differences may lead to quite complex patterns of change at the population level. Recently, Dirk van de Kaa studied the relationship between vital choices people make and demographic change. In his view, the impact of historical events and situations on demographic change is mediated by the choices people make in issues dealing with the meaning of life (Van de Kaa, 1997: 2). Of the people who grow up in the same historical context, many share a common outlook, acquire a similar approach to life, and, as a result, tend to make similar vital choices. These people constitute mental cohorts. The choices that cohorts make affect not only the current cohort, but also the subsequent cohorts: the choices determine the options succeeding cohorts have to choose from. Van de Kaa’s notion of a mental cohort as a group of people with a similar orientation to life, who make critical choices (transitions) and thereby shape not only their own options but also those of future generations, is a very useful concept in the monitoring of demographic change. It points to the causal mechanisms underlying ob-
served path dependencies and empirical regularities demographers aim to capture.

In this paper, the notion of mental cohort is adopted in an effort to enhance our ability to monitor demographic change. It is believed that a breakthrough in our ability to monitor (and forecast) change, is dependent on our insight into the causal factors and processes that determine the timing and sequence of demographic events in the individual life course and the identification and explanation of the shifts in life histories or biographies (for a discussion of this view, see also Willekens, 1984; 1990). The events, the life histories, and the shifts in life histories underlie the demographic changes that are observed at the population level. The identification of empirical regularities and statistical associations are necessary but not sufficient to monitor change. What is needed is insight into causal mechanisms: "Without a knowledge of these mechanisms, we cannot predict how variables will co-vary when the structure of the system under study is altered, either experimentally or by changes in the world around us." (Simon, 1979: 79).

In order to capture differences in behaviour (heterogeneity), the population may be stratified into sub-populations with comparable behaviour. The pattern of change at the population level may be complex. The complexity is a result of (i) behavioural changes within a stratum, (ii) changes in composition (composition effects), and (iii) interactions between the component populations. In the extreme case, population change is viewed as an outcome of actions and interactions of individuals. This perspective on population dynamics is referred to as methodological individualism. In this perspective, the interest in the individual is instrumental; the individual is not the primary focus, but the individual focus is needed to explain and predict changes at the population level ('analytical primacy', Lindenberg, 1991). In this perspective, populations change because people change and people interact. The determinants of population change (e.g. economic development, education, labour force participation, etc.) do not affect populations directly; they affect populations indirectly, through their impact on the lives of people and on the choices people make. Consequently, the monitoring of demographic change requires the monitoring of changes in people's lives. The models that are traditionally used to monitor and forecast populations and/or sub-populations, are inadequate to capture the richness (or complexity) of people's lives and to determine the effects of varying life paths or life histories of the population. What is needed are theories and models of individual behaviour throughout the life course and theories and models that describe how the individual choices (or actions) cause phenomena to emerge at the population level (for a discussion of the micro-macro link, see Coleman, 1990: 5). In this regard, the mental cohort is a particularly useful concept.

The approach of methodological individualism is analogous to the synergetics approach in theoretical physics, which was adopted by Weidlich and Haag (1990) for the study of migration and other dynamic phenomena. The fundamental insight of synergetics is: "Whereas on the microlevel of interacting units each system (in-
cluding physico-chemical systems as well as migratory systems) has genuine, in-commensurable properties of its own, there emerges a universal structure of the macro-dynamic behaviour of all systems on the level of aggregate-macrovariables in spite of their different microscopic constitution!” (Weidlich and Haag, 1990: 2). The insight provides the justification for constructing a bridge between individual-level behaviour and population-level ‘equations of motion’. The approach of methodological individualism has also adopted agent-based analysis and models (e.g. Epstein and Axtell, 1996; Gilbert and Conte, 1995).

This contribution is organised as follows. Section 2 discusses two approaches to the monitoring of demographic change, the first focusing on empirical regularities and the other on the causal mechanisms that provide the foundation for observed regularities. The first approach is data-driven while the second is theory-driven. The second approach is discussed in this paper. Two sets of theories are particularly useful for the monitoring of demographic change. The first set provides insight into how demographic events are embedded in the life course and affected by other events and experiences in life. This is the subject of section 3. The second set describes how life histories are embedded in a historical context. The cohort, and in particular the mental cohort, is adopted as a key concept in the study and monitoring of demographic change. The perspective that historical factors affect the size and the composition of the population through their effect on individual life histories is presented in section 4. Section 5 concludes the contribution.

2. Monitoring: From empirical regularities to causal mechanisms

The main subject of monitoring demographic change is to describe and explain past, present, and future changes in (i) the size and composition of a population, and (ii) the number of demographic events (births, deaths, marriages, migrations, etc.) by populations and sub-populations. Monitoring also involves the explanation of deviations between predictions (what was expected) and realisations.

Two approaches may be distinguished. The first focuses on the observed (overt) patterns of change and tries to identify patterns that are stable in time and space. The search for stable patterns is characteristic of the demographic approach (Coale and Trussell, 1996: 469). The second approach focuses on the factors that underlie the stable patterns. These factors are generally not directly observable but can be inferred from the data using an appropriate theory (story or anchored narrative, Van de Kaa, 1996).

The traditional approach to monitoring and forecasting involves a search for regularities, i.e. the identification of stable patterns in data. It has been the dominant approach for decades. In 1972, Keyfitz wrote: “Demographic forecasting is seen as the search for functions of population that are constant through time, or about
which fluctuations are random and small.” (Keyfitz, 1972: 347). In a review of models in demography, Coale and Trussell (1996: 469) state that “One of the characteristics of demographic research is the search for regularities.” In that tradition, methods and models of increasing levels of sophistication are developed to capture stable patterns in mathematical expressions with a few parameters only; these models are applied to describe the past and forecast the future. The approach works relatively well, except when clear breaks with the past occur as a consequence of technological breakthroughs (e.g. invention of effective means of fertility control) and/or changes in values, or legal or economic conditions. In 1965, the Netherlands Central Bureau of Statistics predicted a continued high fertility, following the trend in the past years, resulting in a population of the Netherlands in the year 2000 of about 20 million people. The NCBS forecast caused much upheaval, as exemplified in the Second Physical Planning Report of 1966 which called for a major redistribution of the population over the country to avoid excess concentration in the West. The forecast did not come true, since the NCBS did not foresee that fertility would decline rapidly since the mid-1960s. It is a clear illustration of an ‘assumption drag’, a term coined by Ascher (1978) to denote that forecasters continue to base their assumptions on major trends even if the trends are changing. Keilman (1990) found that the increased level of sophistication of the analytical tools and the ever-growing sources of data at the disposal of the demographer did not significantly increase the accuracy of the forecasts. He concludes that the accuracy is determined more by the actual development of demographic behaviour than by the projection method used. Since trends do not change rapidly most of the time, forecasts based on empirical regularities are accurate most of the time. However, in periods of rapid change, when predictions are needed most, forecasts are inaccurate because sudden changes are generally not foreseen. Recently, Keilman evaluated the accuracy of the United Nations world population projections and concluded that one of the main factors having a strong impact on the accuracy of the projections, is a sudden change in real trends (Keilman, 1997: 33). A dominant feature of projections is that significant or rapid changes in trends are not anticipated. Whereas changes in the real world are full of surprises, projections are generally surprise-free. Consequently, if one really wants projections to capture the changes that occur, even when they are rapid, the prevailing projection models must be augmented or replaced by models that capture the causal mechanisms that govern change. That is not to say that the search for regularities is not necessary. It is a necessary condition to better monitoring and forecasting, but it is not sufficient. Since distinct mechanisms may operate in different population segments, the identification of relatively homogeneous sub-populations is a necessary step in the monitoring of demographic change.

The second approach to monitoring and forecasting involves the identification of the causal mechanisms that govern change. Any causal mechanism or set of related mechanisms represents a theory of change. A problem is that one may
specify more than one set of mechanisms that are all compatible with the empirical evidence. Lesthaeghe (1997: 12) gives two reasons. One reason may be that the mechanisms operate simultaneously in different segments of the population or in different contexts. A second reason may be that the observations (data) are inadequate (e.g. too parsimonious) to uniquely determine the mechanism that is operating. Some mechanisms (theories) are complementary and not mutually exclusive, or they may facilitate or inhibit other relevant mechanisms. What is needed in that case is a method to determine the mechanisms that are plausible given the evidence, and to determine the mechanism(s) or theory (theories) of change that most likely governs the observed dynamics. The procedure is analogous to the maximum likelihood method in statistical inference. In statistical inference, the task is to select, among a range of plausible probability models, the model that most likely predicts the observations. In this case, the task is to distinguish between plausible theories (or ‘good stories’ as Van de Kaa [1996: 389] calls them), and to select the theory that most likely predicts the empirical evidence. If the theory can be adequately captured by a probability model, then the problem of selecting the ‘best’ theory is relatively straightforward. If the theory cannot be represented by a model, an objective identification of the ‘best’ theory among plausible theories may not be feasible and one is left with a subjective appreciation of alternative theories or ‘good stories’.

Populations change because people change. Hence, the monitoring of demographic change requires the monitoring of changes in the lives of people, i.e. in the life histories or life paths. In this context, it is of particular significance (i) to approach demographic events as being embedded in the life course, and (ii) to view the life course as being embedded in a historical context. The life course is an evolving process unfolding in a particular historical context. The demographic events, the individual development path (life course, biography), and the historical development path constitute the three levels of analysis that must be considered in the monitoring of demographic change. At the intermediate level, one may consider the development path of people who share significant historical experiences (cohort biography [Ryder, 1985: 16]) or have a similar orientation to life (mental cohort [Van de Kaa, 1997]). In addition to the levels, one must consider the links between the different levels, e.g. the relationship between population dynamics and individual life histories.

A dominant variable in dynamic or process analysis is time. In demographic analysis, different time scales may be used simultaneously to measure changes in demographic indicators or in the parameters of demographic processes. Historical or calendar time, age, duration of marriage, birth interval, duration of residence are expressions of time or duration. Each measure of time may be represented by a clock that starts at a given event-origin. For instance, age is the time elapsed since birth; duration of marriage is the time elapsed since marriage; and birth interval is the time elapsed since the birth of the previous child. For the purpose of this con-
tribution, two time scales are distinguished: historical time and age. The model that results is an age-period-cohort (APC) model. The APC model encompasses the model of the generalised stable population theory (Preston and Coale, 1982). The key feature is that the parameters of demographic processes vary with age and historical time. The traditional APC model is not an explanatory model but a statistical accounting scheme.

The timing of demographic events along the age scale is explained on the basis of a biographic theory of demographic behaviour, which situates demographic events within the context of the life course. Hence the variations with age are related to attributes of human development over the life span. Life histories change because historical events occur that affect the lives of people; the lives of different generations are affected differently. Adolescents and young adults in their formative periods are likely to be affected more by historical events than elderly people and the effects last longer. Consequently, historical events introduce generation effects. The timing of transitions in the life courses of people is explained on the basis of the theory of generations. The integration of biographic or life course theory and generation theory provides a basis for monitoring that is rooted in an understanding of the causal processes at work. The modern APC analysis integrates life course analysis and cohort analysis. It is interesting to note that the ‘modern’ approach adopts more fully than previous approaches the version of cohort theory promoted by Ryder (1965) in his classic paper. Ryder states that “transformations of the social world modify people of different ages in different ways; the effects of these transformations are persistent. In this way a cohort meaning is implanted in the age-time specification. Two broad orientations for theory and research flow from this position: first, the study of intra-cohort development throughout the life-cycle; second, the study of comparative cohort careers, i.e. inter-cohort temporal differentiation in the various parameters that may be used to characterise these aggregate histories.” (Ryder, 1965: 861). Ryder emphasises the need for a theoretical formulation of the phenomena under study and a focus on processes instead of on “the illusion of immutable structure” (Ryder, 1965: 859). The approach advocated by Ryder is similar to the one suggested by Baltes and Nesselroade (1979) for psychological research.

3. Biographic theory

Theory
Life is a complex, evolving process situated in time and space. As a person ages (s)he passes through a sequence of stages. Infancy, adolescence, young adulthood, and mature age are examples of stages. Each stage is associated with a particular developmental potential or developmental readiness, determined by biological, psychological, and social factors. Each stage may therefore be characterised by a
set of attributes pertaining to the individual. The transition from one stage to the next is determined by events (life events). Demographic events such as marriage, divorce, childbirth and migration are life events, but so are labour force entry, leaving the parental home, etc.

The occurrence of a life event is a significant moment in a person’s life and is generally associated with a critical choice. A major feature of life events is the sense of permanence and commitment implied by the events. Upon occurrence of the event, life takes a different path that is generally difficult to reverse. As a result, a structure emerges, sometimes referred to as ‘life structure’. A choice for marriage, children or divorce is a choice for a life-style (orientation to life) and a pattern of behaviour and a life course that cannot easily be reversed. For instance, the presence of a child requires attention, time and energy which cannot be allocated to other spheres of life. Consequently, the biographic or lifestyle options are very much affected by the occurrence of life events. According to Birg et al. (1991), the ‘langfristige Festlegung’ or sense of permanence and commitment is the main feature of life events and that is why these events cannot be understood outside of the life-course context. That is the rationale for the biographic theory of demographic events. Birg et al. introduce the concept of ‘biographic opportunity cost’ to denote the options (life paths) foregone by a critical choice or the occurrence of a life event involving a long-term commitment (Birg, 1990: 20).

An important fact that should be considered in the monitoring of demographic change is that most demographic events have lost their dominant position in the human life course. Today, the lives of people are structured less around the demographic events than they used to be. Technological innovation and increased personal autonomy associated with social permissiveness give a person the ability and responsibility to direct his own life. The dominant position of demographic events also diminished because of increased life expectancy. When life expectancy was low, women spent most of their lifetime bearing and raising children or preparing for it. Today, the number of years a woman spends raising children is a declining proportion of the life span, because of declining fertility and increased life expectancy. For many women, motherhood is no longer the dominant activity in life. Consequently, the significance of motherhood as the organising principle of the female life course has been declining. As more women spend an ever increasing proportion of their lifetime in the labour force, the employment career is becoming the dominant organising principle of the female life course.

There is a growing awareness that demographic behaviour must be studied in the changing context in which it takes place. It is useful to distinguish at least two levels of context. The first level is the life course and the second is the historical context. Demographic events are part of life and one should examine how they fit

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1 This is consistent with the notion of opportunity cost that was developed as part of the economic theory of behaviour and is applied in a number of theories of marriage, fertility, and migration.
into life (see also McDonald, 1996; Courgeau and Lelièvre, 1996; Uhlenberg, 1996)\(^2\). The rationale is that the events people experience in life are related; consequently, demographic events cannot be isolated from other important events. Since the life course encompasses the various aspects (domains) of life, the life course perspective is an aid to integrate new evidence into existing knowledge. The second level is the historical context. The lives of people are shaped partly by historical events, such as technological innovations, legal changes, major natural or man-made events, etc. Historical events affect most members of a given cohort in a similar way, leading to cohort effects. Events, whatever their nature, individual or historical, have both an immediate effect on the lives of people and a delayed effect. When the effect is not immediate, the effect is generally mediated by other events or experiences, leading to complex causal patterns. The study of events in their setting (in vivo) poses many theoretical and methodological problems that are at the core of life history research.

**Analytics**

To describe the life course, it is convenient to consider an individual as a ‘carrier’ of attributes. At each age, a particular combination of attributes characterises an individual. Living status (alive/dead), marital status, health status, level of education, and region of residence are attributes that are commonly used in demographic analysis. Frequently, the attributes are categorical variables, which can take on a finite number of values (levels). Age is not considered to be an attribute; it is a time variable measuring the time elapsed since a reference event (birth) or the duration of the developmental process.

Some attributes are fixed for the entire life span, while others vary. Gender, year of birth, and endowments are examples of invariant attributes; the value of the attribute does not change as life progresses. A selection of attributes, the levels of which may change with age, may be used to characterise the life course; they are referred to as primary attributes. The attributes selected to describe the life course depend on the purpose of the study. In nuptiality analysis, for instance, marital status is a primary attribute, while in morbidity analysis, health status is a primary attribute and marital status may be of secondary importance, at most. Primary attributes are used to identify the stage occupied in the life course. Secondary attributes differentiate individuals in the same stage. Each combination of values of primary attributes (aspects) defines a state or status, and individuals with the same primary attributes are said to occupy the same state. Notice the distinction between state and stage. Any combination of values of primary attributes specifies a state. A stage, sometimes also denoted as a spell, refers to an episode in the life course. Because of our definition of primary attributes, a transition to a

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\(^2\) The emergence of the life course as a major research paradigm in the social sciences is discussed by Elder (1994).
new stage of life implies a passage to a different state. An immediate implication is the possible contribution of multistate demography to the study of the life course. In fact, the multistate life table represents a description of the life history of a (synthetic) cohort, i.e. it represents a cohort biography.

A life event is a change in the value of a primary attribute and a passage to a different state. Changes in values of secondary attributes do not imply a passage to another state but they may enhance or inhibit a passage because of their impact on the primary attributes. With each primary attribute may be associated a life event. For instance, the event 'marital change' is associated with the attribute 'marital status'. 'Migration' is associated with 'place of residence'. Some life events may occur at most once in a lifetime. They are known as non-repeatable events. Death and first marriage are non-repeatable events. Repeatable events may occur more than once. Migration, marital change and childbirth are repeatable events. The distinction between non-repeatable and repeatable events is common in analytical demography.

A sequence of events of a given type constitutes a career. The life course is composed of many careers, such as the marital, educational, professional, employment, medical, maternal, and residential careers. Elder (1978, 1995), a pioneer of life course analysis in sociology, described the life course as a set of interdependent careers. Most careers can start only when other careers are completed; they are sequential or serial careers. The onset of the professional career, for instance, generally follows the termination of the educational career. The onset of a career coincides with an event, called event-origin. For instance, first marriage may be used as the event-origin of the marital career, while graduation from school signifies the start of the professional career. The location of the onset of a career is not a simple task. One may argue that the marital career does not start with first marriage, but with the onset of the search for a partner. Similarly, the fertility career does not start at birth of the first child, but at the time of the first conception. The start may be pushed back further to menarche, i.e. the onset of the period of exposure to the risk of conception. The distinction between onset and advancement of a career has important analytical implications. The factors that determine the onset of a career may differ substantially from the factors that govern its continuation (progression).

The distinction between onset and progression generalises the distinction that is traditionally made in demographic projections. Numbers of births and numbers of survivors are estimated separately. Analogously, in forecasting the elderly population, a distinction is made between the change in the probability of reaching the age of 65, say, and the expected lifetime beyond that age. The 65th birthday is the event-origin. The life expectancy is the expected duration of the process (survival process) starting at 65.
4. Generation theory

The basic idea behind generation theory is that events of historical significance, such as a major technological breakthrough or a new political or legal system, affect people in the same stage of life ('contemporaries') similarly. The effect is most pronounced when the historical events occur in a stage of life when critical choices (life choices) are made. That is why events generally affect young persons in their formative period more than older persons. Critical choices are relatively difficult to reverse and therefore have a long-term impact. In addition, these choices contribute to the life structure that determines the options persons have in later life. When historical events or conditions induce contemporaries to make similar life choices (choices that have a life-long effect), the effects will be major. People with similar attitudes or approaches to life are likely to make comparable choices in a given historical situation. Such a group or people are referred to by Van de Kaa as a mental cohort. Mental cohorts may comprise different birth cohorts. The choices they make not only shape their own life but also result in the social change that conditions the choices future generations may make. An illustration is the increased personal autonomy acquired by people with a common outlook on life in the 1960s. Those ready to demand and accept individual autonomy in an early stage of historical development were a select group. They were young, highly educated, living in cities, not attending church, and with a political preference left of centre (Van de Kaa, 1997: 9). This new outlook on life was manifested in various ways, such as economic independence (paid job), unmarried cohabitation, use of modern contraceptives, delay of childbearing, and voluntary childlessness. A key characteristic is that commitment to others (partner, children) is delayed and reduced. It is expected that the trend to personal autonomy continues as the control over life events continues to shift from society to the individual. Légaré and Marcil-Gratton (1990) consider the individual programming of life events such as childbirth and death a challenge for demographers in the twenty-first century.

The critical choices contemporaries make shape not only their own lives but also that of future generations. This view introduces irreversibility in socio-demographic change and is an important element of a theory of change. In that view, demographic change, i.e. change at the population level, is closely connected with changes in the individual life course. Van de Kaa asserts that the pattern of social change in which one generation paves the way for the next is a general one, experienced by all countries in Europe. All countries experience the same stages of socio-demographic development but are a little out of step (Van de Kaa, 1997: 23). Important historical events, such as technological breakthroughs, trigger the onset of a new stage in the process of change. For instance, a powerful catalyst of demographic change in Europe, enabling the Second Demographic Transition, was the introduction of modern contraception (Van de Kaa, 1997: 25). It triggered
behavioural changes and caused new patterns of behaviour and new social structures (e.g. living arrangements) to emerge. The general nature of the mechanism of change shifts the interest from the description of the pattern of change to (i) the characterisation of the processes of change and (ii) the identification of the events or conditions that affect ongoing processes of change or that trigger new processes which may cause sudden or rapid change. These factors must be understood in order to be able to monitor demographic change and to forecast the population in periods of rapid change.

Ultimately, the new insights in processes of change should be integrated into trend models and projection models. The age-period-cohort model that is implicit in several projection models provides a good point of departure. The effects of stage in the life course (age), of contemporary factors (period) and the lasting effects of historical factors experienced by a group of people (cohort) are difficult to disentangle because of the presence of interactions. For instance, age-period interactions arise from the non-proportionality of period effects on the behaviour of people in different stages of life. Cohort-period interactions have been discussed by Ryder (1965) and others. Cohort-period interaction may arise from two sources. First, members of different cohorts may react to contemporary factors differently. Second, the composition of cohorts may change as a result of selective attrition of cohort members. The selective attrition may be the outcome of independent conditions affecting successively older cohorts. The changing target model of cohort fertility (Lee, 1980) and the mortality forecasting model of Lee and Carter (1992) are examples of cohort-period interaction.

Cohort-age interaction may arise from the selective attrition of cohort members due to disturbing events that are age dependent. The cohort-period and cohort-age interactions arising from heterogeneous susceptibility of cohort members to disturbing events have been known to demographers as the so-called ‘cohort-inversion models’, but have rarely been formally estimated (Hobcraft et al., 1985).

5. Conclusion

Monitoring demographic change is mostly data-driven and the improvement of current population estimates and forecasts is believed to depend on more and better data, including longitudinal data (repeated measurements). It seems that the field has reached a status in which more and better data and models of increasing complexity do not result in significantly better performance, in particular in

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3 It is interesting to note that Mannheim (1928), who introduced the concepts of cohort and generation in sociology, ascribed the growing interest in the cohort problem to political discontinuities in the late nineteenth century. The discontinuities that are currently observed in political and social life may in part explain the revival of the interest in cohort and generation analysis.
periods of major behavioural and social change. In this contribution, it is stressed that a breakthrough in the practice of monitoring change is dependent on the insight into *causal factors and processes* (mechanisms) that determine the level, sequence and timing of demographic events. The events we observe are manifestations of underlying substantive and chance processes. When the focus of research shifts from the overt behaviour to the underlying processes, we are confronted with new challenges. Commonly collected data may prove to be inadequate and methods of analysis including models may be of limited use. The real challenge is to develop simulation and forecasting models that are based on theories which reveal the causal mechanisms determining human behaviour and which explain demographic change in terms of these mechanisms.

The mechanisms that govern demographic change may conveniently be grouped into life course processes and historical processes. This grouping provides a link between the basic analytical framework adopted in demographic studies of change, namely, the period, cohort or age-period-cohort framework and dynamic theories of behaviour. Behavioural changes are largely attributed to life course transitions and variations in the contextual factors, such as technological innovation and institutional arrangements. People in the same stage of life and with a similar outlook on life are expected to respond similarly to historical factors. They constitute a mental cohort; the choices they make affect not only their own lives but also those of future generations. Van de Kaa’s concept of mental cohort provides a very useful addition to the theories that provide a foundation for the study, monitoring, and forecasting of demographic change.

References


4 Boerma (1996: 241ff) offers an interesting discussion of the usefulness of data collected in the Demographic and Health Surveys for the understanding of the causal mechanisms involved in child survival. He concludes that “Quality assessment of the DHS data shows that such surveys provide useful information at the descriptive level, but do not seem to extend further at the explanatory level.” (Boerma, 1996: 243).
Boerma, T. (1996), Child Survival in Developing Countries: Can Demographic and Health Surveys Help to Understand the Determinants?, PhD Dissertation University of Amsterdam, Amsterdam, KIT Press.


