Theoretical and Methodological Problems in Researching Short-Term Fluctuations in Fertility: The Model for Evaluating the Impact of Societal instability

Short-term fluctuations in fertility remain one of the most underresearched areas of demography. There are many examples of how short-term fluctuations in fertility failed to be adequately explained within existing theoretical framework. For instance, at the period from early 80-s to late 90-s Sweden had experienced fertility swings that were stronger than in any other Western country. Total Fertility Rate in Sweden rose from its lowest-ever level of about 1.6 in 1983 to around 2.1 in 1990-92 and then dropped to a new low of about 1.5 in 1997 (Hoem 2000). Explanations point to a worsening economy and cutting in social welfare, however, leave an open question of why fertility swings of that steepness were not matched by European countries with similar or worse economic conditions. Especially, since by some accounts, fertility in Sweden had declined before the benefits were trimmed (DeVanzo and Grammich 2000).

Short-term fluctuations in fertility in the former USSR during mid-80s also puzzled demographers. In 1981, the government of this communist state had introduced a pronatalistic population policy containing such measures as partially paid maternity leaves, tax deductions for families with two and more children, and other bonuses. For several years fertility showed a steady increase, and then started to decline. This pattern was typical for all countries that instituted similar population policies such as France, Hungary, Czechoslovakia, Eastern

Germany and Poland. A puzzle emerged in 1985 when fertility suddenly started to increase again, reaching its peak in 1986, and then turned back to decline. This trend showed up across most regions of the country, both in urban and rural areas. While there are many attempts to explain the "mystery of 1986", there has yet to be a clear understanding of the social factors that produced these short-term fluctuations in fertility.

Also, sudden and short lived fertility increase in Czechoslovakia in 1969, shortly after Soviet invasion, has yet to be explained. The increase was reflected by fertility indicators that eliminate "structural effect". There was no implementation of population policy in the years before the trend or the presence of any other noticeable factor that is traditionally held accountable for fertility swing. One possible explanation, the paradoxical, counter-intuitive effect of political and social instability that followed newly achieved political freedoms of the "Prague Spring", fits major premises explored in this paper. There should be more elaborations and proof for this explanatory claim, though.

Rapid and steep decline in fertility is experienced nowadays by all countries undergoing transition from the administrative-command economy to market economy and democracy. There is wide controversy among scholars about the causes of these fertility trends in the countries of the former Soviet block. Different demographers point for decline in standard of living, stress related to rapid change of socio-economic systems, start of the second demographic transition, the postponed effect of spliced birth intervals during previous decade, to name but a few, as the major causes accountable for steep fertility decline (Da Vanzo and Grammich 2000; Naseleniye Rossii 2002; Perevedentsev 1999: 17-40; Vishnevsky 1996: 1-34; Zakharov and Ivanova 1995) Accorsdingly, it remains subject of academic and, increasingly, political debate, whether these fluctuations are of a short- or long-term nature (Da Vanzo and Grammich 2001: 21-25;

Field 2000: 11-42; Vassin 1996: 175-200; Zakharov 1999: 292-317).

Among the most curious and the least researched short-term fluctuations in fertility are the ones that happen at the times of societal instability. Instability could take place in states, world systems, economy, political process and ideology. There are many examples of such instability throughout history. The terrorist attack on the World Trade Center on September 11, 2001, for instance, caused fear of instability related to security of citizens, functioning of airline industry, and safety of the Internet, to name but a few; actually, the very vitality of Western type civilization was challenged.

The concepts of stability/instability had attracted scholars of sociological and political disciplines. Though not totally identical, concepts of stability/instability and equilibrium/disequilibrium are used interchangeably; stability is equated with equilibrium while instability is defined as disequilibrium. Though traditionally the concept of equilibrium is associated with social order as opposed to conflict, this view is challenged by those viewing order as a product of conflicts and as a totality comprised by these conflicts. For instance, Russet wrote: "It is simply not accurate, historically or logically, to align equilibrium, unequivocally with integration and harmony since there is not a prior reason why a conflict model of equilibrium, theory could not be constructed. So it has been - Gumplowicz, Bentley, Pareto, to name some others, conceived of social equilibrium as a hotbed of strife among conflict interests. Equilibrium cannot safely be identified with concord" (cited in Alexander 1982: v.1, 174).

Given the provided discussion on relationship of stability/instability with conflict, it is worth concentrating on the relationship of these concepts with crisis. Though instability is often times confused with crisis, they are not identical; indeed, there could be crises that are quite "stable". For instance, in the countries with command-administrative system like former USSR

and its satellites in Eastern Europe there were permanent shortages of goods and services. This built-in feature of the centralized socialist economy exemplifies economic crisis; the latter was quite stable, though - the shortages were always there. Another example of "stable" crisis, the one in politics, is the pattern of governmental crises in post-war Italy. However, often times crises could be coupled with (and be the reason for) an instability. The Great Depression of 1929 in the US, for instance, had brought up instability far beyond the economic sphere: it had huge impact on such institutions as family, education and governmental regulation, etc. In the paper I focus mostly on the impact on short-term fluctuations of fertility of those societal instabilities that are not directly coupled with economic crisis.

There are several reasons why existing population theories fail to explain short-term fluctuations of fertility including those related to societal instability. Most demographic theories including demographic transition, wealth-flow, cultural and institutional, focus on changes in fertility over relatively long-term periods. While there are some attempts to understand short-term fluctuations of fertility, notably the Chicago-Columbia School of microeconomic theory (Becker 1976, 1991), these typically relate to changes in the cost-benefit equation in fertility decision-making and have been criticized as holding only in the state of equilibrium. Likewise, the Pennsylvania School of microeconomic theory (Easterlin, Pollack and Wachter 1997) traces formation of attitudes toward fertility to the childhood and the early adolescent years and thus does not leave much room for the role of rapid social changes. Therefore, such theories provide little explanation of short-term fluctuations in fertility and their relation to rapid and unexpected social change.

One explanation for why there is so little work on short-term fluctuations in fertility is that existing theories have not effectively developed macro-micro links. Institutional theory, for

example, may provide a macro-micro link by specifying how institutional changes shape the segmented decision-making environment that is taken into account when an individual makes a fertility decision (McNicoll 1994). However, this theory does not provide a clear algorithm for how the segmented decision- making environment is formed, and fails to predict what level and direction of fertility change occurs under the influence of any particular societal development. On the other hand, the Chicago-Columbia School of microeconomics can take certain macro-societal change (such as, for instance, technological developments) into account while explaining individual fertility decision-making but pays little attention to social, political and economic dimensions. As a consequence, the unique and often times paradoxical nature of socio-political and other societal changes that may produce short-time fluctuations remain understudied, and the process by which macro-micro level conditions influence individual fertility decision-making is largely unarticulated.

The above mentioned shortcomings of current demographic theories in explaining short-term fluctuations of fertility can also be found in theories exploring such fluctuations during periods of societal instability. This has led the author to a search for a more general theory that would address all of the missing points – the one that would encompass macro-micro links, be applicable to short-term fluctuations, incorporate value changes in periods of societal instability and address the specific impact of societal instability on fertility decision-making.

Uncertainty Reduction Theory

The theory that satisfies all of these criteria is uncertainty reduction theory (Friedman, Hechter and Kanazawa 1994). The theory starts with an assumption of a rational actor who maximizes value in his fertility decision-making. This initial general assumption shares the

premise with the rational choice based microeconomic theory of fertility. The breakaway point that distinguishes uncertainty reduction theory from traditional rational choice explanations is the assumption about *what kind of value* is maximized. Uncertainty reduction theory emphasizes *universal immanent value* that rational actors seek to reduce. Decision-making under uncertainty differs from that under risk in the knowledge of probabilities of the alternative outcomes. While failure to achieve desired ends could be the case for both states -- situations of risk and situations characterized with uncertainty – in risk situations the decision-maker can judge the odds of failure, while in situations marked with uncertainty he cannot. The inability to assess the odds under situations of uncertainty dictates an actors' preference for risky situations, where judgment about probabilities of different sets of choice outcomes could be made. Thus, uncertainty reduction theory assumption could be formulated: *Actors will always desire to reduce uncertainty by converting it into a certain, even if risky, situation*. As authors of uncertainty reduction theory stress, because actors value uncertainty reduction as an end in itself rather than just as means to various other ends, it is an *immanent* rather than an *instrumental* value.

People can reduce uncertainty in two ways. The first one is to gather information that transforms uncertainty to risk for a local choice problem. The second one is to pursue global strategies designed to reduce uncertainty regarding whole strings of future courses of action.

The authors of the theory point out several such global strategies. The principal ones in developed countries are stable careers, marriage and children. Most importantly, Friedman et al argue that having children reduces uncertainty because parenthood is irreversible and irrevocable. This is because, first, having children involve actors in recurrent social relations, and, second, creates an irrevocable commitment to a stream of expenditures over a long period of time.

There is a question that stems from the uncertainty-reducing character of the decision to have a child. Don't children creating new uncertainties while reducing the other ones? Friedman et al. list these uncertainties that could increase with parenthood:

> "Will the child be born healthy or with birth defects? Will it grow up to be a good child or delinquent? Will it succeed or fail in school? Will it experience major illnesses? Why would an actor interested in reducing uncertainty willingly introduce new sources of uncertainty?" (Friedman et al. 1994 : 383).

The answer to that question is a well-established cognitive bias. According to the founding of decision theorists and cognitive psychologists, people's perception of risk is biased in one predictable direction. People tend to downplay risks that they assume (justifiably or not) they are in control of; risks out of their control loom larger in their perception. Example: driving a car is objectively riskier than flying an airplane, but people subjectively tend to feel otherwise because of their feeling that while driving a car they are more in control. Uncertainty reduction theory suggests, "because parents can do so much to control their children's fate, risks and uncertainties emanating from parenthood are likely to be diminished in comparison with types of uncertainty that individuals seek to reduce through parenthood" (Friedman et al. 1994: 383).

Uncertainty reduction theory thus provides a set of hypotheses linking types of uncertainty with strategies for its reduction. Specifically, it predicts that two categories of individuals are more likely than others to seek parenthood: (1) those that face greater uncertainty and (2) those that have less access to other means of uncertainty reduction. Friedman et al. suggests that an example of the first category is minorities with the poorer prospects of stable successful career who will seek parenthood more to reduce uncertainty, while an example of the second category is persons with poorer prospects of stable marriage.

Uncertainty reduction theory contains a subsidiary assumption of the enhancement of marital solidarity. This assumption asserts that husbands and wives will seek to increase solidarity in their marriages. Parenthood thus could be hypothesized from the perspective of reducing uncertainty by increasing the stability of marriage (possibility correlated with parenthood).

Propositions from uncertainty reduction theory and its subsidiary assumptions can be derived for women's acting alone as well as for couples making joint decisions. The important point of the theory is awareness that other factors could affect fertility and thus should be controlled. For that reason uncertainty reduction theory is said to be problematic in application to developing countries, where it is hard to disentangle the uncertainty reduction motivation from the economic motivation. Children in developing countries may increase a household's production capacity, and for that reason fertility behavior leads both to maximization of wealth and to uncertainty reduction. However, uncertainty reduction theory could be well applied to the fertility decision-making in the developed countries.

Summing up, uncertainty reduction theory satisfies major criteria for researching the impact of societal instabilities on short-term fluctuations of fertility: it encompasses macro-micro links, applicable to short-term changes in demographic processes and addresses the issue of values in fertility decision-making. However, there are several issues in explaining and researching instability that are not addressed by the original version of the theory.

Thus in the next sections I propose an extension of uncertainty reduction theory for the purposes of an application to the empirical research on the impact of societal instability on fertility. In doing so, I develop a model that links the macro-societal instabilities with micro-level perceptions of them as uncertainties and with fertility decision-making.

Application to the empirical research: General Model

The first step in applying uncertainty reduction theory to the empirical research linking societal instability with fertility is to define all macro-micro links. Uncertainty reduction theory operates mostly on a micro-level, linking individuals or family unit's perceptions of the situation they are facing in regard to uncertainty with the decision-making (including the one on fertility) that reduces uncertainty. Uncertainty reduction theory doesn't elaborate on connecting societal instability with its perception as uncertainty by individual leaving macro-micro connections largely implicit. Empirical research, though, could deal with different types and levels of societal instabilities that are macro-level phenomena. The first general assumption links macro-level societal instabilities with micro-level perceptions of it as an uncertainty:

(1) Instability on a macro-societal level produces uncertainty on an individual level or a micro-level of a family unit.

This assumption is based on the connection of societal instabilities with increased uncertainty in such institutions as career and marriage, as well as uncertainty related to crime, accidents, and fear of war. Different types of societal instability could have various impact on changing individual strategies in career, migration, investments, etc. due to perceptions of these instabilities as of uncertainties. The second general assumption links a micro-level perception of uncertainty with decision-making on fertility, with its general premise being borrowed from the uncertainty reduction theory:

(2) The greater the perceived uncertainty on a micro-level, the greater the number of births is per individual or a family.

The second assumption has a large body of empirical support. Whether in a direct or indirect form (that is, linking fertility decision-making and behavior with individual uncertainty

perception or status implying existence of such uncertainty), several works support this premise of an uncertainty reduction theory.

The hypothesis that arguably gathers the biggest empirical support is the one on negative effect of prospects for a stable and successful career on the propensity to parenthood. The derivation from this hypothesis is that stable employment and career are effective means to reducing uncertainty and thus subgroups with the poorest prospects for achieving them (like poor African-American teenaged women) are more likely to seek parenthood.

The work of Geronimus (1987) strongly supports this hypothesis. Based on a large set of data as well as on previous research, the author states that among urban poor Black Americans teen pregnancy became a norm. The figures are as follows: while only 23% of white American first births are to teenagers, almost 50% of Black American first births are to teenage mothers. The figure is even higher for poor Black urban American mothers, one of the most disadvantaged groups in society in regards to having stable and successful careers.

What looks like even more convincing support of the uncertainty reduction theory's premise is that there is a differentiation in teenage childbearing *within* that group. Geronimus states that there is a different norm in the urban black community for teenage and out-of-wedlock childbearing for those women exhibiting exceptional academic achievement. The author argues, "Those teenagers believed to possess the skills necessary to overcome chronic barriers to achievement and upward social mobility are selected out of the peer group and are discouraged from bearing children during their teens" (Geronimus 1987: 256). So, even within a group of poor urban Black American young women those having prospects of a stable career as a means of uncertainty reduction do not need to use another mean of its reduction - -that is, early and/or out-of wedlock parenthood.

As a certain support for the hypothesis of the impact of stable and successful careers on fertility one can consider the work of Rindfuss, Morgan and Swicegood (1984). Their finding is that women with at least a college degree are substantially less likely to become mothers than other women. The authors explain it by the fact that "these are precisely the women who enter careers that effectively compete with the prospect of childbearing for woman's time" (Rindfus et al. 1984: 369).

The second hypothesis that is derived from the uncertainty reduction theory and that has empirical support is the one of positive effect of divorce on the propensity to parenthood. Divorce is viewed here as an uncertainty, so increased fertility is seen as a way to prevent it. The support for this hypothesis surfaced in some interviews, conducted in the course of a scientific study of people who are childless by choice (Veevers 1980). The author notes that "marital insecurity often time leads to a more immediate decision about having children" (Veevers 1980: 37). Though specialists doubt that having a child is an effective solution of marital problems, respondents often times believe otherwise.

It is worth saying that along with strong confirmation of this research hypothesis in many scopes, there are some cases that contain ambiguity, while some disprove it. It is quite possible that different types of uncertainties affect fertility decision-making in different directions. That makes testing hypothesis in different scopes even more important. The proposed model allows for divorcing different types of uncertainties by linking them with different scopes and types of instability (More elaboration on that is presented in the next section).

It is also worth mentioning again that uncertainty reduction theory propositions are valid for the decision-making in the state of symbolic uncertainty not directly related to changes in

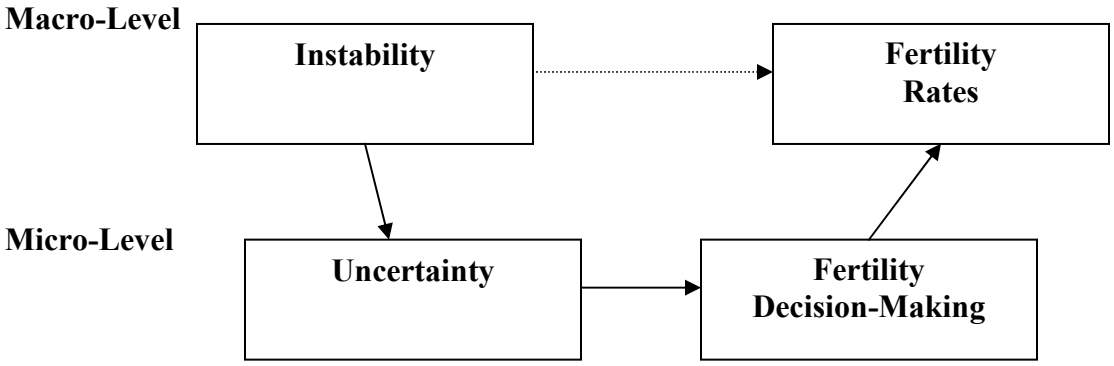
available economic resources. Thus uncertainty reduction theory premises could only be applied to the periods of socio-political instabilities that generate mostly symbolic uncertainties.

Finally, the assumption that links micro-level fertility rates is simple:

(3) *Changes on a micro-level will be reflected on a macro-level.*

The general model encompassing these three assumptions can be represented in a following way (see Figure1):

Figure 1. The General Model for Evaluating Societal Instability's Impact on Fertility



The model is tested by comparing fertility rates at periods marked with different types of societal instabilities. However, the more detailed hypotheses that link these two macro-level variables based upon developing assumptions about macro-micro and micro-micro levels connections, are formulated in the next section.

Development of the Model

The first step in exploring this heuristic model is to speculate about how different types and levels of societal instabilities (macro-level) at different periods are perceived by individuals and families (micro-level). Uncertainty reduction theory does not elaborate on ranking uncertainties in scope and intensity, much less relating them to corresponding types of instability. It is obvious, though, that those macro-level societal instabilities of various scope and magnitude generate different levels of uncertainty at the micro-level of an individual or a family. Governmental crises in Italy, for instance, won't generate as much uncertainty as the possible comeback of Communists to power in Russia as seen after 1996 elections. By the same token, uncertainty created by the 2000 presidential elections in the US was not reduced to the one related to a routine change in politics of a new Party and President. Such uncertainty generating issues as legitimacy of the new presidency, actual disenfranchisement of certain groups of electorate and vitality of such institution as separation of executive and judicial branches, were also brought up.

Several pieces of scholarly work give some insights into possibility of ranking instability in scope and intensity. First, some insights could be found in the classification of social change introduced by neo-institutionalists (North 1990). Several types of social changes are distinguished: incremental change, discontinuous evolutionary change and simply discontinuous

change. Though the author is not quite specific about what exact kind of change creates the strongest instability (disequilibrium), one can infer that: first, incremental change does not shake the existing equilibrium directly; second, discontinuous evolutionary change which is described as a specific type of the equilibrium, is not a significant threat to its violation; third, discontinuous change could lead to disequilibrium followed by a new equilibrium. "Perestroika" ("reconstruction") policy started in the former USSR by Gorbachev is a good example of the latter. Indeed, in the course of this policy that aimed at the change of the system basics, no one new whether status quo or the new equilibrium would be the reforms' outcome (it turned out to be the second, the establishment of new social, political and economic system). So, this kind of change had created the greatest possible scope and intensity of instability.

In a similar vein, Alexander provides a typology of the equilibrium concept along three different dimensions: stable vs. unstable equilibrium refers to whether or not social development is predictable; stationary vs. moving equilibrium refers to whether individual variables change over time.; static vs. dynamic equilibrium refers to whether fundamental historical transformations in the nature of systems concerns could occur (Alexander 1982: v.1, 174). This typology leads to the possibility for classifying instability in scope and intensity. What is important for the proposed model is that ranking societal instabilities allows for classifying corresponding levels of associated uncertainties at the micro-level. The latter, in turn, allows for predictions of fertility behavior, according to the model.

The key to translating macro-level instabilities to micro-level uncertainty reduction assumptions is to look at how particular types of instabilities could be perceived by individual and by a family as uncertainty generating. One of the best works worth exploring for the purposes of linking macro- and micro-levels is the one that does comparative research on risk

perception in Poland, Hungary, Norway and the United States (Goszczynska, Tyszka and Slovic 1991). In estimating how people perceive risks and hazards Slovic developed a "psychometric paradigm" that elicits quantitative judgments of risk of diverse hazards, similar to certain kinds of psychophysical scaling. The comparison was made of these judgments with others of the same hazards on different scales, reflecting risk characteristics. Risk characteristics were the following: unknown to the exposed, unknown to science, unfamiliar, involuntary, containing unobservable consequences, severity of consequences, dread, carrying catastrophic potential. Because of high correlations of some of these characteristics with each other they were reduced to two factors. Factor 1, called "unknown risk", included such scales as unknown to the exposed, unknown to science, unfamiliar and involuntary. Factor 2, "dread risk", was composed of such characteristics as severity of consequences, controllability, dread and catastrophic potential. These two factors were found to be accountable for some 75% of the total variance in the measures.

How could these risk factors be related to the uncertainty perception? Concepts of risk and uncertainty are often times used imprecisely and interchangeably in the decision-making literature. Risk factors defined by Goszczynska et. al, according to which the factor defined as "unknown risk", is actually referred to as an uncertainty. The latter differs from risk in one way: it is impossible to assign probabilities in the decision-making process because they are unknown. The situations perceived by respondents as "unknown risk", as defined by Goszczynska et al., satisfy this criterion. Thus hazards that score high on the "unknown risk" scale -- such as social tension, economic crisis, nuclear power, shortages of home and medical equipment, shortage of dwellings -- could be well perceived as the ones creating uncertainty.

The way to employ these findings for the model is, first of all, to relate these two factors as uncertainty generating ones to the described types of societal instabilities. The first step -- translating macro-level instabilities to the micro-level perceptions of them as uncertainties for the purposes of formulating research hypotheses -- is to make assumptions about this translation. Based on the discussion provided above, the first assumption linking macro- and micro-levels could be formulated:

(1) *The more societal instability is related to situations that could be perceived as "unknown" factors, the more it is perceived as an uncertainty.*

Factor 2 is most closely associated with the following scales: dread uncontrollability, catastrophic potential, severity of consequences, risk for future generations, involuntariness and personal exposure to risk. This factor, called “dread”, is independent from the first, the “unknown risk” factor. Among hazards, scoring high on the" dread” factor without scoring high on the “unknown” risk scale is: crime, shortage of food, nuclear weapons, alcohol, narcotics and terrorism. The two factors combined produce a joint picture of “unknowingness” and “dreadness” of risk. Hazards that reflect both “dreadness” and “unknowingness” are: economic crisis, social tension, repressions, shortage of medicines and medical equipment, nuclear power, pesticides and herbicides. In opposition to the first factor, the second one is not related directly to the uncertainty, because it encompasses hazards with both known and unknown risk (i.e. uncertainty). However, I believe that the instabilities in societal segments related to more “dreadful” consequences will provide a stronger desire for uncertainty reduction than the instabilities related to lesser “dread” hazards (given the same degree of “unknowingness”, i.e. uncertainty itself). This assumption is based on the nonsystematic observations showing differences between perception of uncertainty, say, related to the introduction of socialized

medicine and perception of uncertainty related to possibility of nuclear reactor explosion (though both could be characterized by the same degree of "unknowingness").

Hence, assumption two could be formulated:

(2) *People will be more motivated to reduce uncertainties related to societal instabilities that produce more "dread" consequences.*

The two factors described above were found to be accountable for some 75% of the total variance in the measures. The rest of the variance, according to that study, could be explained by two other factors. The first of these two other factors is the size of the country. The size of the country contributes to the perception of uncertainty in that: the bigger the country, the more its absolute number of accidents, crimes etc. are perceived as a threat even if the share of them in a given population is the same. This conclusion was illustrated by comparing differences in perceptions of the same hazards between populations of Poland, Hungary, Norway and U.S. (Goszczynska et al. 1991: 181).

The second of these two other factors is the media information policy. The cited study explains some of the differentiation in uncertainty perception in the observed countries by levels of openness of mass media (Goszczynska et al. 1991: 181). First, there is a difference in the level of censorship between communist and noncommunist countries. As noted by the authors, the strict censorship on accidents, shortages and crime in the communist countries could lead to the perceptions of those hazards that differ from the ones in the non-communist countries without such strict censorship. Second, there are different levels of censorship across communist countries. For instance, people in Poland have relatively more information about such hazards as catastrophes, accidents and crime than people in the other former communist country, Hungary, due to the existence of an independent Catholic press and numerous uncensored underground newspapers in Poland. This premise could also be applied nowadays to the "industrial

democracies" because of different levels of informational availability in different parts of the countries.

The second finding allows postulating two additional assumptions about the perception of societal instabilities:

> *(3) The instabilities of the same levels of "unknowingness" and "dreadness" will be perceived differently at various historical periods. The periods, characterized with greater access to information, will be typified by a greater perception of uncertainty.*
>
> *(4) The instabilities of the same levels of "unknowingness» and "dreadness" will be perceived differently in various regions of a given country. In the regions with greater access to information and less strict censorship the perception of uncertainty will be greater than the ones in the regions with lesser access to information and more strict censorship.*

These assumptions have implications for the macro-micro link – between societal instabilities and the individual's and family's perception of it as uncertainty.

At this point I am turning to the second part of the diagram -- micro-micro link. According to the uncertainty reduction theory outlined in previous section, increased uncertainty is a predictor for increased parenthood. The theory talks about decision-making for having a child vs. being a non-parent. This link can be extended to all kinds of increased fertility: giving birth to a second, third or fourth child or narrowing the intervals between births in the case of increased uncertainty. The reason for this advanced assumption is that more children reduce uncertainty to a greater degree than having one child and to a greater degree than creating new uncertainties associated with new children. In addition to the outlined uncertainties associated with having one child (the possibility of having a sick, deviant or unsuccessful child), there could be also uncertainties linked to the children of higher order (e.g. second, third or fourth). Certain periods of history are characterized with high infant and child mortality, and this could be a factor in reducing uncertainty by giving birth to a second and third child in the countries

exemplified with these mortality trends. Thus, assumption linking uncertainty perception with fertility decision-making (micro-micro link) could be formulated in a following way:

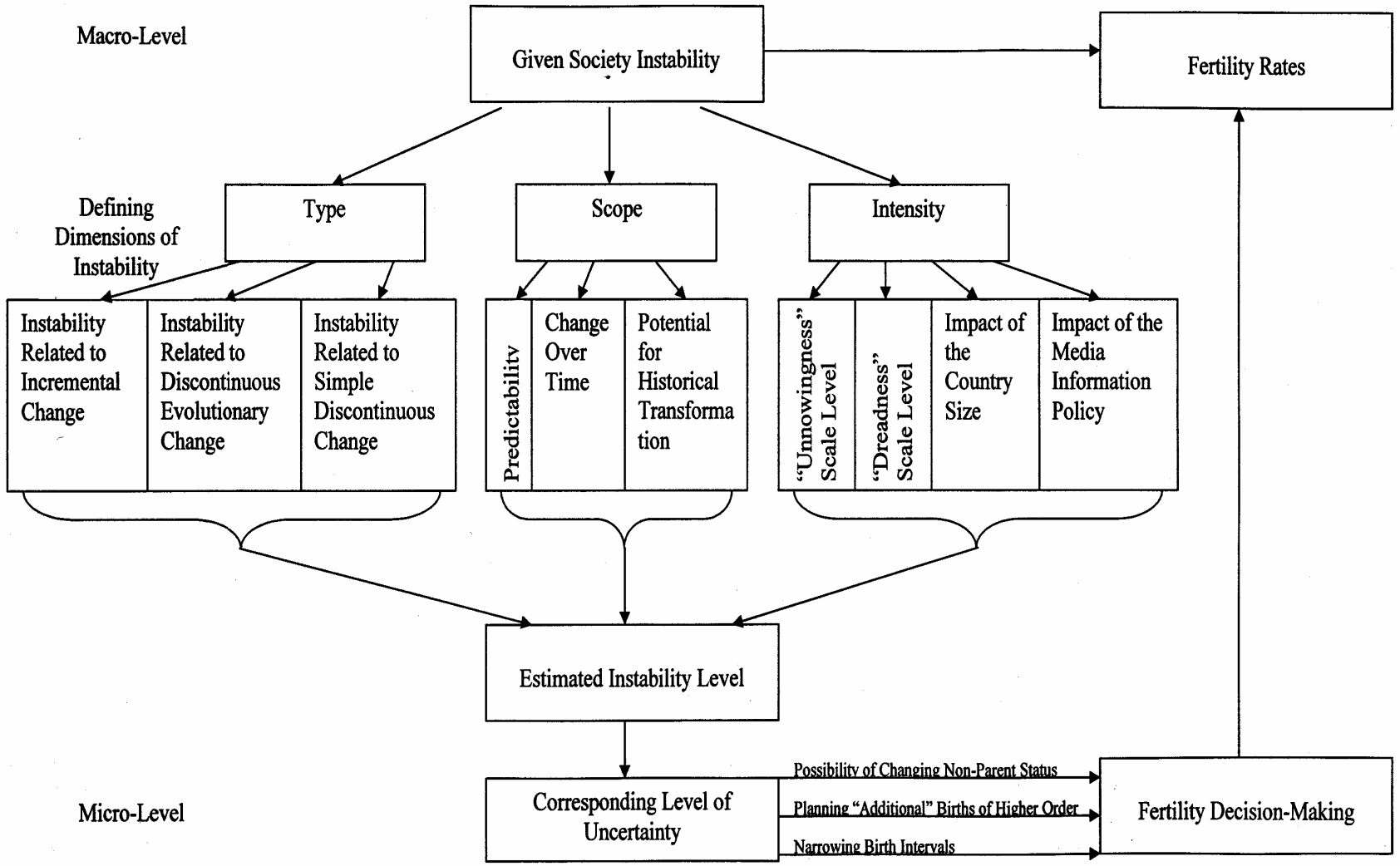
> *(5) The greater the perception of uncertainty, the greater the fertility outcome for an individual and/or a couple (resulting either from moving toward decision to have one child or, by increasing the number of children or, spacing the intervals between births differently).*

Finally, third link – the micro-to-macro one – does not require advancement and thus stays the same as formulated in the previous section:

> *(6) Any increase in fertility of an individual or a family level will inevitably result in greater fertility rates at the societal level.*

This elaborated model could be represented in the following way (see Figure 2):

Figure 2. Elaborated Model for Evaluating Societal Instability's Impact on Fertility.



In related research that is currently in progress I apply the proposed model to the empirical research on the impact of societal instabilities on fertility dynamics in the USSR/Russia. Explication of this model that I undertake doesn't provide data in support of the theory (due to the current state of the research) but rather gives an example of maintaining an empirical design. The idea is to illustrate how this model could be applied to a study where micro-level data on uncertainty perception is not available.

Former socialist countries appear to be ideal testing ground for instability's impact on fertility. Transition from the command-administrative economy to the so-called market economy and from authoritarian form of government to democracies creates a huge scope of instability. However, testing hypotheses on instability's impact on fertility in this scope faces the problem of control. The thing is that along with social and political instability the countries undergoing transition experience rapid economic transformations with severe deterioration of standard of living for huge segments of the population.

As noted before, the model could be applicable only to those societal instabilities that are not related to direct and severe economic consequences for the population. In the latter case microeconomic theory that predicts adverse effect of economic decline on fertility, could be brought up for an explanation. (Microeconomic theory's predictions proved to be accurate in a given scope. For instance, in Japan recent economic uncertainties due to globalization had an adverse effect on fertility). Thus in case of former socialist countries undergoing transition it appears to be hard to split following theoretically possible explanations for rapid decline of fertility: the adverse effect of severe deterioration of living standards that counters the impact of social and political instability; uncertainty created by social and political instability could not be compensated with increased fertility due to increased uncertainties related to unpredictable

perspective for newborns in these conditions (in that case fertility is no longer a mean to reduce uncertainty); uncertainty reduction theory simply doesn't work in this scope. Because of these difficulties related to accurate account for fertility trends at the time of socialist countries' transition, the emphasis in the provided part of the research is made on periods in which social and political instability were not coupled with direct economic consequences that created severe deterioration of living standards.

In this research I draw upon two political theories to develop a typology of instability and provide its ranking in scope and intensity. The first theory, "reciprocal accountability" (Roeder 1993), defines cycles of political leadership in the former USSR. The neo-institutional model developed by Roeder provides an explanation of power relations in the authoritarian state. It allows for figuring out the periods of socio-political instability related to power imbalance and rank order them in scope and intensity. Altogether four consequential cycles are defined and ranked in terms of instability intensity. These periods vary in regards to instability in two planes of society: policy and civil society. According to this theory, there are four such successive cycles: 1) collective leadership; 2) breakout of a leader under collective leadership; 3) directive uncontested leadership; 4) directive contested leadership. The instability of policy is conceptualized as incoherent (among its elements) and inconsistent (over time) and is viewed in a context of four instability types of the leadership cycling: 1) the relatively small instability within most stable cycle (uncontested directive leadership); 2) the relative instability of the cycles: from the most stable one, directive uncontested leadership, to the least stable, the contested leadership; 3) relative stability of each successive cycle with the corresponding one (for instance, Brezhnev's directive leadership vs. Khrushchev's directive leadership); 4) instability caused by the reversal of reforms.

The second theory employed in this research is the one of a "social contract" (Cook 1994). This theory allows for distinguishing instabilities related to long-term changes in social institutions. According to that theory, social stability is based on an implicit agreement between political elite and population. The political elite provides "social contract" package including secured employment, delivery of free medical and social services, stable wages and prices, with population paying with compliance and loyalty. The deterioration of social contract and its further erosion and failure in delivery have marked corresponding periods of instability. According to the theory, several periods are defined in regards to the delivery of a social contract: first, the period of stable delivery of social contract (1953-1979); second, the period characterized with certain failures in the delivery of social contract, or the beginning of a deterioration of its delivery (1980-1985); third, further deterioration of social contract (1986-1991); fourth, complete breakdown of social contract (with the breakdown of a socialist state of USSR at 1991). The rank ordering of political and social instability could be performed along the lines of this periodization.

Combination of these two theories' classification of instability had allowed ranking order the periods along the lines of scope and intensity of these instabilities – from the most stable periods of collective leadership to the period of breakdown of social contract exemplified with the strongest instability. Next step of the research is to provide macro-micro links that is to make assumptions about how societal instabilities were translated as individual's and family's perception of them as uncertainties. Here are these assumptions based on previous discussion:

1) All periods marked with any kind of instability are perceived as containing more uncertainty than relatively stable periods because unstable periods are marked with greater inconsistencies.

2) Periods with similar types of instability vary in regards to degree of uncertainty they generate. The greater the institutionalization of "reciprocal accountability", the less there is an oscillation between directive and collective leadership and, hence, the less is the contestation of policy. Thus Brezhnev's contested directorship at 1982 had created less uncertainty than the one of Khrushchev at 1960-1964. By the same token, Brezhnev's breakout at 1965-1969 had generated less uncertainty than the similar breakout of Khrushchev at 1954-1957.

3) Among two types of unstable periods the one typified with the breakout of a leader and the other – by contested leadership, the latter is perceived as the one generating greater uncertainty. Thus, Khrushchev's directorship at 1960-1964 had generated greater uncertainty than either Khrushchev's or Brezhnev's breakouts correspondingly at 1954-1957 and at 1965-1969.

4) The greatest uncertainty is generated at the periods of the deterioration and erosion of "social contract". These periods score the highest on the scales of "unknowingness" and "dreadness". It is not accidental that such hazardous, dread and unknown risks containing event as explosion at the nuclear plant in Chernobyl had happened exactly at that period.

The next step of the research is to test hypotheses on instability's impact on fertility. Hypotheses are tested by comparing fertility rates at periods correspondingly ranked in scope and intensity of instability as well as by comparing fertility at instable periods with the one at stable periods. While comparing fertility at different periods, one needs to control for age, period and cohort effects. In micro-level fertility analysis that uses annual rates age, period and cohort

effects are typically confounded. For each period there are several different cohorts that reached different ages by the given time period. At the same time the effects of the age period and cohort on a dependent variable could be causally distinctive. As an example, one can provide an attempt to explain men's earnings in the United States over time. As noted by the researchers, age per se could have an independent effect on earnings because of its correlation with the accumulation of occupational experience. Period that corresponds with age could also affect earnings independently because of wage-prices structures change with time. Finally, membership in a cohort of a particular size also may affect job opportunities and, therefore, earnings.

Yet, because age, period and cohort are linearly related to each other as well as to independent variable, a three way analysis would not provide an adequate result. Eliminating any of these three parameters could lead to spurious relationships. However, it is important for the provided research to single out the impact of period effect on fertility because periods differ in scope and intensity of instability. The method employed in this research is the variant of age period-cohort models (Mason et al. 1973), solves the problem. This method, designed to separate effects of age, period and effect, makes use of a regression equation with dummy variables as a first step. The next step needed to estimate the separate effects of three variables is making an assumption of the identical effect parameters among any two values in any style dimension (i.e. age, cohort or period).

Summing up, the research employs the proposed model. Research employs such elements of the model as advancement of uncertainty reduction theory by ranking societal instabilities and translating these instabilities into individual's perceptions as uncertainties. Instability is ranked in scope and intensity, with help of "dreadness" and "unknowingness" scales.

Hypotheses about corresponding levels of perceived uncertainties and its impact on fertility are formulated.

What is also important is that this research exemplifies such possibility provided by the model as indirect testing of hypotheses by comparing macro-level data fertility at periods marked with instabilities of different scope and intensity. Indeed, it is impossible to test hypotheses directly because it is hard to obtain micro-level data on individual perceptions of instabilities as uncertainties for most of historical periods encompassed by the research.

Conclusion

Proposed heuristic model allows reformulation of testable hypotheses that link societal instabilities with fertility rates. The model resolves the problems that had been developed in previous research due to the attempts to explain short-term fluctuations of fertility by long-term trends in macro-societal developments. Contrary to that, societal instability that could last for a relatively short period of time is now viewed as possible reason for the short-term fluctuations of fertility.

The model allows for linking these two phenomena – societal instability and short-term fluctuations of fertility – in the empirical research. It also allows for distinguishing between macro-societal instability and its perception as uncertainty on a micro-level of an individual or a family. This distinction was typically ignored in the theoretical and methodological literature on the subject. The result of it was the confusion of two levels of analysis – macro- and micro ones. This confusion has distorted the phased process of formulating the predictions of fertility rates for a given period. The proposed model resolves this problem by divorcing these two levels of

analysis, thus allowing for better empirical tests of the hypotheses about the impact of societal instabilities on short-term fluctuations of fertility and, correspondingly, for the more accurate predictions of the latter.

The model is opened to practically any theory of instability as far as it allows for ranking their types in scope and intensity, thus allowing for translation into the individual's or family's perceptions of them as uncertainties. It incorporates premises of the extended uncertainty reduction theory but is not limited to them. The model also has an inclusion of connections between instability and its perception as uncertainty at the individual level – the ones that are not explicated by the uncertainty reduction theory. It proposes ranking uncertainty in regards to corresponding intensities of instability with the help of scaling "unknowingness" and "dreadness" levels.

The model could be tested directly, if the information about individual's or family's perceptions of uncertainty is available. In that case the test includes data on uncertainty perceptions and fertility decision-making. If this information is not available, the model could be tested indirectly by comparing different types of societal instabilities with fertility rates at any given period.

The model has a broad application. It could be used in empirical research conducted in developed countries, with the goal of evaluating the impact of societal instabilities on short-term fluctuations of fertility. It could be applied to cross-national and cross-historical studies of short-term fertility fluctuations.

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