1. Introduction

The impact of various types of societal instability on fertility intentions, attitudes and behavior remains an issue deserving special attention. The nowadays world faces instabilities ranging from climate change to the ones related to economic uncertainties; their impact on demographic outcomes is of great importance for the world development and sustainability.

Recent history has provided many examples of the short- and middle-term fluctuations of fertility due to different kinds of societal instability. For instance, there was a marked increase of fertility in some areas of NY immediately following the terrorist attack of September, 2001. Likewise, there was as steep rise of fertility in Iceland after the advance of the crisis of 2008. On the contrary, all countries of Eastern Europe that underwent the rapid and painful transition from the so-called "command administrative" to the market economy had experienced substantial decline in fertility for several years in a row. Given the opposite and sometimes paradoxical effect of various types of instabilities on fertility, it is worth researching this phenomenon in whole length, in order to predict possible demographic responses to the uncertainties that world faces, from climate changes to the creation of a non-polar geopolitical world order.

Previous work addressing changes in fertility intentions, attitudes and behavior related to societal instability is in relatively short supply. Vast majority of the studies has focused on either the impact of instabilities related to natural disasters, wars and famines (Palloni 1990; Palloni 2006), or on the effect of economic instability, in particular, unstable employment and other types of market insecurities such as term-limited working contracts (Kreyenfeld 2010; Perelli-Harris 2008). The impact of more moderate political instabilities such as cycles of empowered political elites, as well as impact of sociopolitical instability in civil society (not directly or fully related to economic uncertainties) on fertility has received little attention.

The former USSR and nowadays Russia provides a unique opportunity to examine the relationship between fertility rates and various types of instabilities. USSR and its successor, Russia, had both minor political instabilities and major ones such as the breakdown of the state and the very social system. It also had in-built crisis, like the permanent shortages, the collapse of command-administrative economy, and the painful transformation to the market-type economy. (Aslund 1994). Some periods are typified with only one type of instability while others

have several. The variety of different types of instabilities in recent history of the country allows for an examination of their impact on short-term fluctuations of fertility.

In sociological literature most of the conceptualizations of societal instability are inclined to functionalism relating stability with an equilibrium, and instability-with the disequilibrium. Some (e.g. Alesina and Perotti, 1993) distinguish between executive instability that is manifested itself by the inability of elites to govern, and the one based upon indicators of social unrest and political violence. Sofranko and Bealer (1972) link societal instability with the imbalance of institutions and provide operationalization of the phenomenon. According to them, there is intensity, number and magnitude of instability that create a construct of the instability's level.

In this paper I study mostly two types of instability. The first one is mostly of a sociopolitical nature. To understand sociopolitical instabilities in the recent history of the USSR/Russia I draw upon "social contract" theory describing long-term changes in social institutions. Social contract theory (Cook 1984) describes the core institutional setting that provides stability to a social system. According to this theory, societal stability is based on an implicit agreement between the government and populace that dictates loyalty and compliance of the latter in exchange for the provision of a "social contract" package, including secured employment, delivery of free medical and social services, stable wages and prices. The initial deterioration of the social contract (1978-1986) that further had developed into the erosion and failure of its delivery (1986-1991), have marked corresponding periods with high level of instability in a civil society. The second type of instability is related to the elitist conflict described by Roeder (1993). The author introduced a concept of "reciprocal accountability" that is related to the violation of equilibrium of various tiers of power in a totalitarian state. Certain attention is also given to the combination of political and economic crisis in regard to its impact on fertility intentions, attitudes and behavior.

The paper addresses two fundamental questions:

1. Are fertility rates affected by socio-political and economic instability?

2. Are fertility rates affected differently, both in magnitude and direction, by different types of instabilities?

2. Hypotheses

As a basis for the first set of hypothesis for my research I use and reformulate core assumptions of the uncertainty reduction theory. This theory assumes existence of both <u>immanent value</u> and <u>instrumental ones.</u> Immanent value is the reduction of uncertainty. According to this theory, actors prefer decision-making under risk (where probabilities are known) to the decision-making under uncertainty (where probabilities are unknown). Thus actors try to reduce uncertainty by converting it to situations under risk. Actors can do this in two ways. First, they can gather information that transforms uncertainty to risk. Second, they can adopt global strategies designed to reduce uncertainty regarding set of future courses of action (Friedman et al., 1994, 382).

Proponents of uncertainty reduction theory have applied this approach to the explanation of fertility variation, manifested in decision-making of having at least one child vs. having no children being explained from the uncertainty reduction perspective. There are following reason for that. Having a child means decent level of "certainty' in being involved in a stream of expenditures and imbedded in a social interaction for the years ahead after child's birth Several assumptions and hypothesis have being derived from this assumption, including the ones of decision on having at least one child as a reduction of uncertainty related to constrained career opportunity and a reaction of uncertainty related to duration of marriage.

To examine the effects of instability on short-term fluctuations of fertility, I advance assumptions based on uncertainty reduction theory:

(1) Instability on the macro-societal level translates as uncertainty on the individual level or at the level of a family unit.

(2) The greater the extent of instability, the greater the level of associated uncertainty the individual or a family unit would like to reduce.

(3) The greater the level of uncertainty on a micro - level, the greater the number of births is per individual or a family. This increase could result from:

a) The decision to have at least one child rather than not having children

b) Having more children

c) Narrowing intervals between births

These assumptions further suggest formulation of a general hypothesis:

H1. Periods of sociopolitical instability not coupled with economic crisis are typified with increased fertility.

Other general hypothesis concerns periods that are marked with both sociopolitical and severe economic instabilities and crises. Its basic assumption is that severe deterioration of the standard of living leads to reduction to fertility levels according to microeconomic theory even if there is an overlap with the sociopolitical instabilities. Accordingly, the second hypothesis could be formulated in a flowing way:

H2. At periods characterized by both a profound economic and sociopolitical instability fertility rates would be mostly affected by the former and, according to the premises of microeonomic theory, will go down.

3. Data Analysis and Results

In order to test hypotheses it is needed to compare fertility levels at different periods marked with various types of societal instability with each other as well as to view the dynamics of the process within each period. While comparing fertility at different periods it is crucial to control for age and cohort effects in order to single out the period effect. The latter is the one essential for the goal of testing hypotheses since level and scope of societal instability is actually a period effect. As noted by scholars (e.g. Mason et. al, 1973), in macro-level fertility analysis that uses annual rates of that process, age, period and cohort effects are typically confounded. For each period there are several various cohorts that reached different ages by the given time period. At the same time, the effects of age, period and cohort on a dependent variable can be causally distinctive.

This method makes use of a regression equation with dummy variables as a first step. The next step needed to estimate the separate effects of these variables is to make an assumption of the identical effect parameters among any two values in any style dimension (i.e. either age, cohort or period). The differences are solved by manipulating the terms respectively. Estimates are obtained by performing ordinary least squares, with the use of cells of the underlying cohort table as the units of observation.

This very model implies making minimal assumptions of the so-called equality constraints: only two coefficients in one of the three dimensions (age, cohort and period) are assumed equal. The implementation of that model shows, however, that results vary in

dependence of which dimension is used for the equality constraint, as well as which categories within dimension are chosen for equality-of-the effects constraint assumption. There is no way for choosing a best fitting model because of identical coefficients of determination. Interpretive difficulties in such models could also stem from the absence of strong a priori conceptions on behalf of researcher.

To overcome that problem, Mason et. al suggest the second variant of a model that assumes employing more restrictions than just a minimal one needed for estimability. Scholars suggest making two pairs (correspondingly for two dimensions) equal while excluding a single category on the third dimension as well. Pairs of equal coefficients should be altered resulting in several models. And the one with the largest R (coefficient of determination) is the one that gives closest estimate. It is worth mentioning that Winsborough et. al suggest this strategy (increasing number of dimensions for enhancing equality constraints) as a guidance however leaving room for other ways of performing the task as well.

This variant of a model that can be called the one of enhanced quality constraints requires a-priori knowledge of which categories in each dimension (age, period and cohort) could be considered equal effect-wise. If this knowledge is lacked, the following strategy is recommended. A step-wise procedure in which the whole dimensions are added or excluded from any given model could provide additional information about the ability of the dimensions to account for the variance in the dependent variable. The results then could be compared across a number of non-than-minimally restricted models. R total and R-s for equations excluding single dimensions are compared.

These methods were employed in a research for the purpose of singling out the period effect on fertility, with the latter playing a role of a dependent variable. The data on fertility used in this research is obtained from Goskomstat (State Committee for Statistics), a Russian official body that is a major source of statistical information on economics, demography, social policy and other areas of social life. Data on demographic processes including fertility is obtained in the course of regular Census. The latter is complemented with surveys taken at different times between Censuses. Survey data is used for both specifying demographic data for the years not encompassed by Census and expanding information on the households.

The data obtained from Goskomstat and used in current research for testing hypotheses, contains age-specific fertility rates for five year interval groups of childbearing aged women (15-

19; 20-24; 25-29; … 45-49) for each year of the period of interest, from 1952 to 1998. The technique of fertility ratio calculation for every given year is the following: numerator is the sum of births for the two consecutive years, and the denominator is the number of corresponding group at the middle of the period. Thus the fertility rate is the average for the two year period.

The obtained data on age-specific fertility for the period of interest for 5 year age periods was interpolated with the help of a spline. This transformed (interpolated) data was later used for arranging codification needed to perform the APC regression analysis. It contains cubic spline and performed both for spline interpolation and the smoother. Codification is made with the above described approach proposed by Winsborough et al.

Secondly, I have set up equality constraints within two dimensions (cohorts of 1942 and 1943; years from 1972-1977) and performed a regression with the smoother fertility levels. (The rationale for choosing these very parameters is the following: cohorts of 1942 and 1943 are the ones appeared in the most hard times of the Second World War that implies their semblance; period from 1972 to 1977 is considered to be a stable one according the provided above typology thus assuming minimal period induced diversity of possible impact).

Because initially many coefficients for the period effect of fertility have not demonstrated enough significance I have not only enhanced the equality constraints (added up ages 45-49 plus cohorts 1970-1977) but also used General Linear Model that allows for specifying Beta-s without creating dummy variables assuming equality of intervals of all three dimensions (age, period and cohort). I have performed the ANOVA and as a result got coefficients with good significance.

The results of APC analysis for the smoother with the use of enhanced quality constraints are represented in Table 1.

As seen from the Table 1, the significance level for most of the important years was reached in this application of APC model. The t-s are above the critical level of 1.96.

Table 1

Coefficients(a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.

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		B	Std. Error	Beta			
1	(Constant)	-0,68594	7,539938			-0,09	0,928
	age_16	7,086928	2,422267		0,021661	2,93	0,003
	age_17	21,23565	2,538664		0,064907	8,36	0,000
	age_18	43,35661	2,715022		0,132521	15,97	0,000
	age_19	71,1497	2,941462		0,217471	24,19	0,000
	age_20	100,6272	3,207709		0,30757	31,37	0,000
	age_21	127,0931	3,504822		0,388464	36,26	0,000
	age_22	146,2339	3,825694		0,446968	38,22	0,000
	age_23	155,3342	4,164873		0,474783	37,30	0,000
	age_24	153,8908	4,518253		0,470371	34,06	0,000
	age_25	143,6169	4,88276		0,438969	29,41	0,000
	age_26	127,8292	5,256083		0,390713	24,32	0,000
	age_27	110,2938	5,636471		0,337116	19,57	0,000
	age_28	94,05934	6,022582		0,287495	15,62	0,000
	age_29	80,83481	6,413379		0,247074	12,60	0,000
	age_30	70,89481	6,80805		0,216692	10,41	0,000
	age_31	63,39953	7,205954		0,193782	8,80	0,000
	age_32	57,04561	7,605302		0,174362	7,50	0,000
	age_33	50,70092	8,006063		0,154969	6,33	0,000
	age_34	43,74231	8,408375		0,1337	5,20	0,000
	age_35	36,12288	8,812532		0,110411	4,10	0,000
	age_36	28,24514	9,219003		0,086332	3,06	0,002
	age_37	20,69511	9,627318		0,063255	2,15	0,032
	age_38	13,98026	10,03621		0,042731	1,39	0,164
	age_39	8,383527	10,44601		0,025624	0,80	0,422
	age_40	3,944709	10,85702		0,012057	0,36	0,716
	age_41	0,501668	11,26954		0,001533	0,04	0,965
	age_42	-2,19323	11,6838		-0,0067	-0,19	0,851
	age_43	-4,36898	12,09879		-0,01335	-0,36	0,718
	age_44	-6,16103	12,51446		-0,01883	-0,49	0,623
	age_45	-7,6159	12,93075		-0,02328	-0,59	0,556
	age_46	-8,71021	13,34766		-0,02662	-0,65	0,514
	age_47	-9,41174	13,76517		-0,02877	-0,68	0,494
	age_48	-9,72495	14,18335		-0,02972	-0,69	0,493
	age_49	-9,73572	14,60236		-0,02976	-0,67	0,505
	age_50	-9,56146	15,02298		-0,02922	-0,64	0,525

y_58	16,6825	7,274691	0,047863	2,29	0,022
y_59	15,2462	6,86044	0,043743	2,22	0,026
y_60	14,01137	6,451495	0,0402	2,17	0,030
y_61	10,30707	6,046194	0,029572	1,70	0,088
y_62	7,174056	5,644545	0,020583	1,27	0,204
y_63	4,6899	5,247027	0,013456	0,89	0,372
y_64	2,201643	4,854429	0,006317	0,45	0,650
y_65	1,771458	4,467919	0,005082	0,40	0,692
y_66	0,302354	4,089126	0,000867	0,07	0,941
y_67	-1,6983	3,720334	-0,00487	-0,46	0,648
y_68	-2,23446	3,364769	-0,00641	-0,66	0,507
y_69	-2,14371	3,027038	-0,00615	-0,71	0,479
y_70	-0,911	2,713757	-0,00261	-0,34	0,737
y_71	0,636371	2,434336	0,001826	0,26	0,794
y_78	-0,52104	2,434136	-0,00149	-0,21	0,831
y_79	-0,33319	2,713344	-0,00096	-0,12	0,902
y_80	0,229377	3,026375	0,000658	0,08	0,940
y_81	1,520464	3,363818	0,004362	0,45	0,651
y_82	4,426387	3,71905	0,0127	1,19	0,234
y_83	8,552077	4,087454	0,024537	2,09	0,037
y_84	7,915281	4,465786	0,02271	1,77	0,077
y_85	8,300711	4,85174	0,023815	1,71	0,087
y_86	11,73669	5,243647	0,033674	2,24	0,025
y_87	14,02448	5,640285	0,040237	2,49	0,013
y_88	11,79443	6,040738	0,033839	1,95	0,051
y_89	8,763971	6,444315	0,025145	1,36	0,174
y_90	5,513067	6,850488	0,015817	0,80	0,421
y_91	1,107411	7,258847	0,003177	0,15	0,879
y_92	-4,19685	7,669078	-0,01204	-0,55	0,584
y_93	-9,2165	8,07507	-0,02644	-1,14	0,254
y_94	-9,28672	8,494143	-0,02664	-1,09	0,274
y_95	-11,3673	8,908895	-0,03261	-1,28	0,202
y_96	-13,6888	9,325047	-0,03927	-1,47	0,142
y_97	-15,6478	9,742859	-0,04489	-1,61	0,108
y_98	-15,8381	10,1637	-0,04544	-1,56	0,119
c_08	-6,0951	18,35964	-0,00295	-0,33	0,740
c_09	-5,02482	16,24836	-0,00344	-0,31	0,757

c_10	-3,96004	15,22541	-0,00332	-0,26	0,795
c_11	-2,27488	14,49555	-0,0022	-0,16	0,875
c_12	-0,47748	13,88716	-0,00052	-0,03	0,973
c_13	1,272421	13,34098	0,001506	0,10	0,924
c_14	3,077122	12,83103	0,003932	0,24	0,811
c_15	4,770414	12,34417	0,006514	0,39	0,699
c_16	6,608903	11,87303	0,009569	0,56	0,578
c_17	8,644271	11,41319	0,013189	0,76	0,449
c_18	10,66985	10,96191	0,017068	0,97	0,331
c_19	12,55038	10,51738	0,020962	1,19	0,233
c_20	14,11009	10,07833	0,024521	1,40	0,162
c_21	15,27398	9,643872	0,027536	1,58	0,113
c_22	16,17843	9,146755	0,03018	1,77	0,077
c_23	16,79372	8,687067	0,032344	1,93	0,053
c_24	17,19018	8,258465	0,034115	2,08	0,038
c_25	17,46601	7,855997	0,035655	2,22	0,026
c_26	17,71781	7,475747	0,037147	2,37	0,018
c_27	18,01824	7,114585	0,038745	2,53	0,011
c_28	18,40986	6,704968	0,040551	2,75	0,006
c_29	18,80961	6,299056	0,042392	2,99	0,003
c_30	19,10255	5,897361	0,044005	3,24	0,001
c_31	19,12043	5,50058	0,044978	3,48	0,001
c_32	18,66682	5,109657	0,044801	3,65	0,000
c_33	17,60491	4,725862	0,043074	3,73	0,000
c_34	16,08954	4,350912	0,040102	3,70	0,000
c_35	14,11316	3,987146	0,035809	3,54	0,000
c_36	11,67255	3,637777	0,030131	3,21	0,001
c_37	8,967741	3,307233	0,023536	2,71	0,007
c_38	6,34021	3,001613	0,016909	2,11	0,035
c_39	3,994962	2,72918	0,010821	1,46	0,143
c_40	2,093789	2,500691	0,005757	0,84	0,403
c_41	0,77288	2,329011	0,002156	0,33	0,740
c_44	0,481818	2,286508	0,001382	0,21	0,833
c_45	1,318859	2,439027	0,003784	0,54	0,589
c_46	2,364696	2,651164	0,006785	0,89	0,373
c_47	3,423722	2,909915	0,009823	1,18	0,240
c_48	4,392116	3,204025	0,012601	1,37	0,171

c_49	4,629676	3,537509	0,013102	1,31	0,191
c_50	4,723784	3,889269	0,01318	1,21	0,225
c_51	4,758158	4,254807	0,013084	1,12	0,264
c_52	4,722622	4,630903	0,012792	1,02	0,308
c_53	4,605788	5,01523	0,012284	0,92	0,359
c_54	4,442771	5,406083	0,01166	0,82	0,411
c_55	4,232843	5,8022	0,010926	0,73	0,466
c_56	3,994877	6,202635	0,010136	0,64	0,520
c_57	3,717916	6,606668	0,009267	0,56	0,574
c_58	3,289595	6,975709	0,008049	0,47	0,637
c_59	2,68833	7,360015	0,006452	0,37	0,715
c_60	1,88441	7,761194	0,004433	0,24	0,808
c_61	0,881311	8,181164	0,00203	0,11	0,914
c_62	-0,2673	8,622219	-0,0006	-0,03	0,975
c_63	-1,46912	9,087102	-0,00324	-0,16	0,872
c_64	-2,68278	9,508107	-0,00577	-0,28	0,778
c_65	-3,83276	9,931035	-0,00804	-0,39	0,700
c_66	-4,92656	10,35594	-0,01006	-0,48	0,634
c_67	-5,95282	10,78289	-0,01181	-0,55	0,581
c_68	-6,808	11,21201	-0,01311	-0,61	0,544
c_69	-7,33047	11,64341	-0,01367	-0,63	0,529
c_70	-7,67592	12,0774	-0,01384	-0,64	0,525
c_71	-7,60221	12,51439	-0,01321	-0,61	0,544
c_72	-6,64784	12,95495	-0,0111	-0,51	0,608
c_73	-4,63058	13,39989	-0,00741	-0,35	0,730
c_74	-1,7431	13,85034	-0,00266	-0,13	0,900
c_75	1,957534	14,30796	0,002834	0,14	0,891
c_76	6,247395	14,77524	0,008531	0,42	0,672
c_77	10,62636	15,25609	0,013579	0,70	0,486
c_78	14,47746	15,757	0,017133	0,92	0,358
c_79	17,25791	16,29015	0,01865	1,06	0,290
c_80	19,48165	16,87618	0,018837	1,15	0,249
c_81	20,92333	17,56881	0,017527	1,19	0,234
c_82	21,66045	18,5207	0,01482	1,17	0,242
c_83	21,60406	20,45003	0,010455	1,06	0,291

a   Dependent Variable: smoother

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After that the t-test was performed on testing the statistical significance of the difference of period fertility at the end of each compared period and the year that has preceded it. In both cases – the years that marked the end of a "social contract' period (1986-1987) and the year 1998 were significantly different from the years that preceded, correspondingly, the deterioration of a "social contract" and the start of economic crisis and instability. (Though "social contract" has actually ended up in the 1991, with the breakdown of the USSR, starting 1998 it started overlapping the economic downturn, thus this segment was not included in testing the first hypothesis).

The dynamics of period fertility in the researched periods are illustrated in the Diagram 1.

Diagram 1

Pure Period Effects

Y axis: Beta coefficients on fertility (smoothed)

X axis values: Y_58, Y_60, Y_62, Y_64, Y_66, Y_68, Y_70, Y_74, Y_76, Y_78, Y_80, Y_82, Y_84, Y_86, Y_88, Y_90, Y_92, Y_94, Y_96, Y_98

Period categories (years 1958-1998)
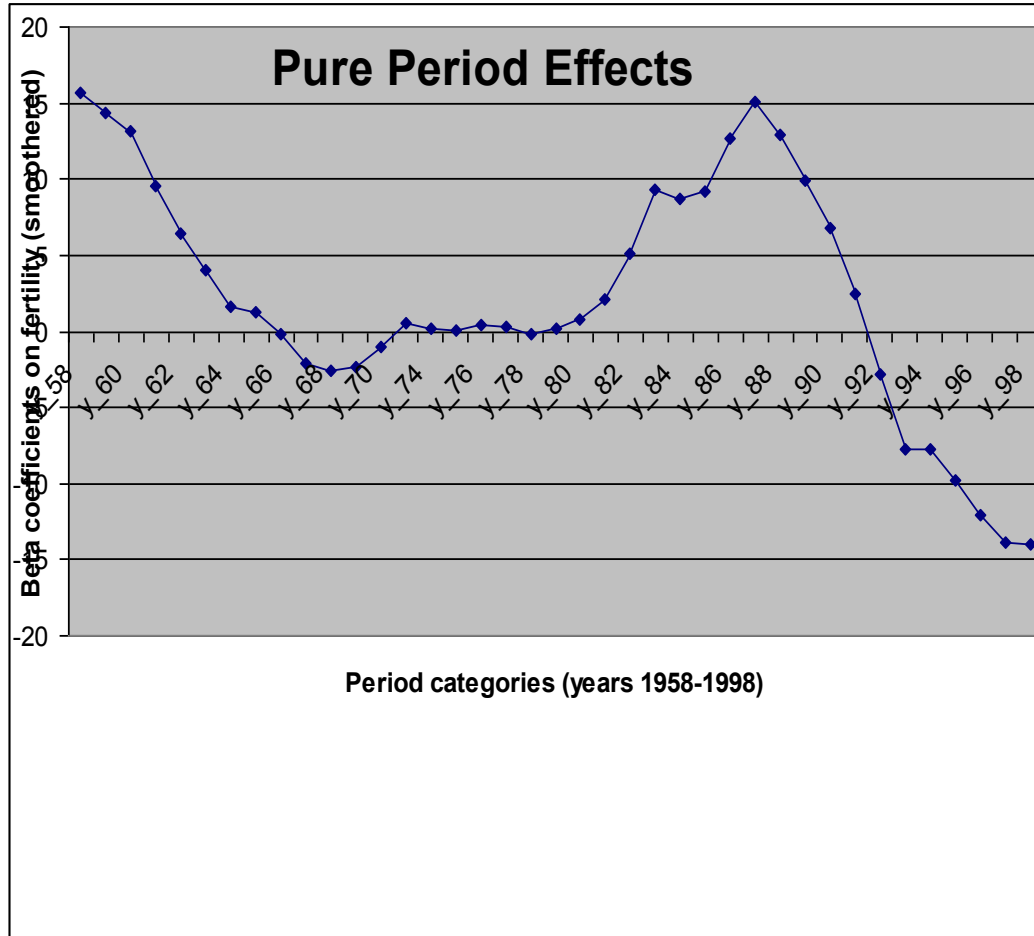
4. Results

Specification of Hypotheses

H1. Periods of sociopolitical instability not coupled with economic crisis are typified with increased fertility.

Hence, fertility rates at the end of each periods of instability that is 1965-1969, 1954-1957, 1982, 1960-1964, 1978-1988* are higher than at the beginning of each period and, even more so, than at the years preceding each of these periods.

H2. The greater the extent of sociopolitical instability at the societal level (if not accompanied by severe economic crisis), the greater is the fertility rate for a given period.

Accordingly, each period marked with higher instability level is typified with greater fertility rates. Hence, the hierarchy of fertility rates will look across instability periods in a following way (from lowest to highest):

1. 1965 – 1969 - Brezhnev's breakout
2. 1954 – 1957 - Khrushchev's breakout
3. 1982 – Brezhnev's contested directorship**
4. 1960 – 1964 – Khrushchev's contested directorship
5. 1978 (esp. 1981) – 1988*[1]

    H3. Stable periods are exemplified with lower fertility rates than the ones marked with sociopolitical instabilities.

    Hence, stable periods of 1953-1954, 1965, 1957-1959 and 1970-1977* are typified with lower fertility rates than periods of 1965-1969, 1954-1957, 1960-1964, 1978-1985 and 1986-1988 marked with sociopolitical instabilities without severe economic crisis.

    H4. Stable periods are typified with greater homogeneity of fertility than the ones marked with increasing level of instability within them.

    Hence, stable periods of 1953-1954, 1965, 1957-1959 and 1970-1977 are typified with greater homogeneity than the unstable ones such as 1965-1969, 1954-1957, 1960-1964, 1978-1985 and 1986-1988.

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[1] Actually, the erosion of the social contract has continued up to 1991, the year of the breakdown of the USSR. But sever economic crisis has exploded in the USSR in 1989, thus for testing hypothesis on sociopolitical instability's impact I've limited the period by the year 1988.
2 The short period of instability related to Brezhnev's contested directorship overlaps with the broader period of the social contract deterioration and erosion.

1. Again, the period of 1970-1981 defined as stable according to the "reciprocal accountability' theory was shortened because at 1978 the deterioration of social contract began to manifest itself. For the same reason other period defined as stable by the "reciprocal accountability" theory, 1982-1986, is not included here.

H5. At periods characterized by both a profound economic and sociopolitical instability fertility rates would be mostly affected by the former and will thus go down.

Hence, period of 1989-1997 is typified with the decline of fertility.

Statistical interpretation and significance of the results.

Here are the very results of hypotheses' testing:

1. H1.
   a. Period 1965-1969 – fertility has declined (see diagram 1).
   b. Period 1954-1957 – data unavailable
   c. Period equated with the year 1982 – included in a broader period of greater type of instability, the deterioration and erosion of a social contract (1978-1986) and thus cannot be tested independently
   d. Period 1978- 1986 (1987) – fertility has increased.

Here the results of the tests for statistical significance of these trends, using formula for the statistical significance of the difference:

. $t = (B1 - B2)/SQRT(S1^2 + S2^2)$, where

B1 and B2 are beta coefficients (to be found in SPSS output)
S1 and S2 are their standard errors (to be found in the same SPSS table)
SQRT stands for square root
^2 stands for square
/ means division

t 1985/1978 = 8.30 – (-0.52)/sq.r (8.30sq. +2.43sq.) =8.82/8.65=1.02

t 1986/1978 = 11.74+0.52/sq.r. (5.24sq. + 2.43sq.) = 12.26/sq.r. (27.46 + 5.90) = 12.26/6.72 = 1.82

t 1987/1980 = 14.02-0.23/sq.r. (3.03sq. + 5,64sq.) = 2.16

t 1987/1981 = 14.02-0.52/sq.r. (2.43sq. + 5.64sq) = 13.5/sq.r. 95.90 + 31.8) = 13.5/6.14 = 2.20

2. H2.

In order to test the hypothesis, the average Bs of the sociopolitical instability periods should be compared.

a. 1965-1969

B= 1.77+0.30-1.70-2.23-2.14/5 = -6.14/5 = -1.23

b. 1954-1957

Data is not available.

c. 1982.

Overlaps with instability related to the deterioration and erosion of a social contract (1978-1988)[1]

d. 1960-1964

B = 14.1+10.31+7.17+4.69+2.20/5 = 38.37/5 = 7.67

e. 1978 (esp. 1981) – 1988

B = 0.52+0.33+0.23+1.52+4.43+8.55+7.92+8.30+11.7+14.02+11.79/11 = 6.30

As the trend of fertility increase lasted till 1987, it is also worth scoring average B for this very period (up to 1987) as well.

B = 0.52+0.33+0.23+1.52+4.43+8.55+7.92+8.30+11.74+14.02/10 = 5.76

Hypothesis is generally not confirmed.

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[1] Again, though erosion of a social contract has lasted up to the very breakdown of the USSR in 1991, the part of the period from 1989 to 1991 was marked with the explosion of a severe economic crisis and thus is tested as a separate hypothesis.

H3. In order to test the hypothesis, the Bs of stable periods should be compared with Bs of periods marked with sociopolitical instabilities.

Stable periods:

1953-1954 – non applicable

1965. B=1.77

1957-1959 – data is available for just 1958-1959. B = 16.68+15.25/2 = 15.97

1970-1977. B = 0.64+0.52/2 = 0.58

Unstable periods:

1965-1969. B = 1.77+0.30-1.70-2.23-2.14 = 4.00/5 = 0.8

1954-1957 - non applicable

1960-1964. B = 14.01+10.31+7.17+4.69+2.20/5 = 7.68

1978-1988. B = 0.53+0.33+0.23+1.52+4.43+8.55+7.92+8.30+11.74+14.02+11.79/11 = 69.35/11 = 6.30

1978-1987. B = 0.53+0.33+0.23+1.52+4.43+8.55+7.92+8.30+11.74+14.02/10 = 5.76

Hypothesis is largely confirmed: the Bs for all unstable periods are higher than for the stable ones except for one stable (1957-1959) and one unstable (1965-1969) period.

H4. Homogeneity of the periods could be measured and compared by the difference between highest and lowest B within each period.

Stable periods:

1953-1954 – non-applicable

1965 – since it is just one year, homogeneity/heterogeneity levels cannot be determined

1957-1959. the data is available only for 1958-1959. B1958-B1959 = 16.68-15.25 = 1.43

1970 – 1977. B1972-B1977 = 20.80-19.36 = 1.44

Unstable periods:

a. 1965-1969

   B1965-B1969 = 1.77+2.14 = 3.91

b. 1954-1957 – non-applicable

c. 1960-1964

   B1960-B1964 = 14.01-2.20 = 11.81

d. 1978 (exp. 1981)-1988

   B1987-B1978 = 14.02-0.52 = 13.5

   B1987-B1981 = 14.02-1.52=12.5

Hypothesis 4 is fully confirmed.

H5. In order to test the hypothesis one has to compare Bs of the year when economic downturn has started (1989) with the preceding year and also compare the year when the economic downturn has leveled off with the first year of the one and the preceding year.

Period of economic downturn: 1989 – 1997.

B1989 vs. B1997 = 8.76 vs. -15.84=7.08

Hypothesis is strongly confirmed except of the fact that actual decline of fertility started a year earlier (in 1988).

4. Discussion

Application of the APC model allowed for singling out the period effect of fertility. However, the latter is not necessarily equated with the social instability's impact. Other period effects are not reducible to the following ones however they could well account for fertility swings as well: the impacts of first and second demographic transitions, population policy, changes in housing policies and certain governmental policies (e.g. anti-alcohol-campaign). Thus the major emphasis of the discussion is to provide an analysis of whether the findings are attributable to the impact of sociopolitical and economic instabilities, or there are also other period effects that could account for changes in fertility rates.

First and foremost it is important to determine if demographic transitions overlap with any of the periods for which hypothesis are formulated and findings are provided. The reason for this endeavor lies in the fact that demographic transitions imply long-term radical shifts in fertility that overshadow any possible short-term fluctuations including the ones due to societal instability's impact. As noted by demographers, demographic transition stage that has manifested itself in steady fall in fertility in Russia began at the very end of the 19t century and continued throughout the first half of the 20th century (Zakharov 2008; Shcherbov and Van Vianen 2001). Scholars also note that forced and brutal modernization in the USSR has contributed to the first pace of demographic transition that started later than in most European countries.

As also noted by many scholars (e.g. Zakharov 2003; 2008), the first demographic transition in Russia was completed in the 1960s. Zakharov (2008, 911) provides a major criteria of the demographic transition completion in Russia. That is convergence of total fertility in the cohort of "mothers" and the cohort of their "daughters", with the former being born between 1920 and 1930. Along with other criteria such as convergence of cohort and period total fertility levels and narrowing of the spatial fertility variation this one testifies to the completeness of the transition to a new type of fertility by the end of the 1960s. That implies the both periods of research interest are post-transitional.

Instability period (1978-1986) marked with the deterioration and erosion of a social contract largely demonstrates steady and statistically significant increase of fertility. For further validation of instability's positive impact on fertility hypothesis other possible period effects of the process at that period should be ruled or singled out.

Many demographers attribute fertility increase in the 1981 to the implementation of population policy. Indeed, the set of measures that include partially paid maternity leaves, tax deductions for families having two and more children, allowances and deductions for housing and placing children in the kindergartens for the same category, extension of the possibilities for working part-time and sliding shifts for young mothers and some other ones were introduces starting November 1, 1981. These measures were implemented in three stages: first, November 1, at the most demographically challenging areas (the ones with the lowest fertility) such as far East, Siberia, Karelia and Komi autonomous republics and also the cities of Arkhangelsk, Murmansk, Vologda, Novgorod and Pskov; secondly, in November, 1982, at the rest of Russia; thirdly, on November 1983, at the other republics of the USSR.

However, there are reasons for considering factors other than population policy that have contributed to the marked fertility increase. In the first place, increase in fertility in 1981 reflected both in TFR (Total Fertility Rates) of official statistics and the period effect singled out in current research (see Diagram 3) is hard to attribute just to the population policy effect since only two months has passed since the policy measures' introduction and only a small part of the country was encompassed by them at that period (Siberia and Far east have very small chunk of population, Arkhangelsk, Murmansk, Vologda, Novgorod and Pskov have a total of some 3 mln. people, while Karelia and Komi autonomous republics have not only tiny but also very aged population).

Some demographers point out for the earlier announcement of the population policy implementation as a possible reason for the immediate impact of the introduced measures. Arkhangelskyi (2006, 8), for instance, notes that publication of the resolution on Population Policy implementation in the first quarter of 1981 could have an impact since it did not contain information about the time frame of policy introduction across the country, and thus population could have an illusion of these measures begin introduced right away. Zakharov (2006, 401), however, casts doubts in citizens being so naïve.

Most importantly, however, for considering possibility for some other factor (besides population policy) that accounts for fertility increase is the evidence of certain fertility increase across the country shortly before the announcement and implementation of population policy. Many demographers (Kuzmin 1993; Arkhangelskyi 1994; Borisov and Sinelnikov 1996) note such an increase at many regions of Russia that started at 1980. Population policy, according this

view, has just enhanced the trend already on the way.

In an attempt to explain the pre-policy implementation trend demographers bring the phenomena of fertility shifting toward younger ages. Indeed, this timing effect could result in the increase of TFR that confounds period, cohort and age effects. Ideally, in order to confirm any period effect (including instability's impact) one has to be guided by the results of an APC model. The ones obtained in using this model in a current research do not indicate for fertility increase in pre-1981 years, thus making notion of fertility shifting to younger ages (which is a cohort effect) the most plausible one in explaining fertility increase at this very time.

However, when analyzing period effect of fertility increase in 1981 evident in the results of implementing APC model in a current research (see Diagram 3), the impact of fertility shifting to younger ages (a cohort effect) could be ruled out. Two kinds of period effects, the one of population policy and the one of instability's impact, are the only contenders. Given provided above arguments casting doubts in population policy being the only reason for fertility increase in 1981, the year when erosion of "social contract" started to become especially profound, the instability's impact hypothesis gains credibility.

If look at the period effect of fertility at that time, one can see its steady increase from 1981 to 1987, with just one interruption: in 1984 and 1985 fertility rates have leveled off. This pretty much coincides with the finding of statistical analysis that uses TFR. While some demographers attribute increase of fertility from 1981 to 1987 to the population policy implementation, vast majority of scholars credit population policy implementation for enhancing fertility in 1981-1983 believing there are other factors accounting for further rise of birth rates in 1985-1987. The reasons for this prevailing opinion include, first, experience of population policy implementation in Eastern European countries where fertility increase lasted 3 to 5 years after policy's measures implementation; and, second, never in the history of population policy implementation there was an interruption of a trend (like the case in 1984 and 1985 in the USSR). As for the latter phenomena, it is worth mentioning that never even a slightly plausible explanation of it (within the premise of population policy's impact on fertility for the whole period of 1981-1987) was ever provided.

So, majority of scholars that don't relate fertility increase in 1986 and 1987 to population policy measures usually attribute this phenomenon to one of the following reasons: first, to the expectations related to Mikhail Gorbachev's "perestroika" (reconstruction) and, second, to the

anti-alcohol campaign launched also by this leader in the second half of the eighties (Klupt 2008; Rimashevskaya and Milovidov 1988).

As for the first listed reason for fertility upgrade at that period, it could be viewed as a variant of uncertainty reduction theory deduction. Indeed, there were no odds of success attached to hopes related to the proclaimed politics of "perestroika" (reconstruction) that was aimed to bring a human face to socialism, loosen censorship in the mass media ("glasnost") and, hopefully, unleash the hidden potential of socialism. Thus it fits definition of uncertainty perception. However, these expectations contained mostly positive, optimistic compounds on behalf of majority of population, and this makes them a special case.

Anyway, there is a little theoretical framework for explaining the impact of such expectations on fertility but such a positive causation cannot be ruled out. However, it leaves a question of why fertility in the USSR went into a steep decline already in 1988 when hopes (or illusions) for perestroika's success have not yet evaporated and economic hardships have not yet fully unfolded themselves either, opened.

Let's turn to the analysis of the validity of second explanation. Anti-alcohol campaign was introduced by then General Secretary of the Communist Party, Soviet leader Mikhail Gorbachev in 1985 (After this campaign Gorbachev was nicknamed a "mineral secretary"). The reason for launching this campaign lied in the grave problems of the country related to the unprecedented advance of alcoholism in the USSR). The account of measures encompassed by the anti-alcohol campaign is fully provided by Reitan (2001, 244). They included reductions in state production and sale of alcoholic beverages, considerable prices increases, raised minimum purchasing age to 21 years, restriction of hours of sale and number of outlets and serving places, closing down of breweries and some banning of drinking in the workplace and toughening penalties for the latter as well as for public drunkenness, drinking at the workplace, drunk driving, production and sale of "samogon" (home-brew).

For the purpose of determining the validity of the claim for an anti-alcohol campaign being the reason for fertility increase in 1986 and 1987 it is important to look at the duration of this campaign. The Resolution on the War with Alcoholism was adopted in May 1985 and enforced from June 1 the same year. Reitan (2001, 245) distinguishes narrow and wider definitions of the campaign period. The first one is given to the active period of policy intervention (from 1985 to 1987/1988) while the second is referred to a period well into the

1990s. Reitan (2001, 245) also cites various views on the actual impact of the campaign that range from few months to all the way into the 1990.

To better understand the duration of the anti-alcohol campaign and the temporal scope of its impact it is also worth brining the overview of the campaign termination process main stages. According to the account cited by Reitan (2001, 245-246) these include the cancellation of the criminal liability for personal samogon use in July 1987, the increase in state sales of alcoholic beverages in January 1988 and adoption of a resolution in October 1988 on the redundancy of anti-alcohol pressure after which campaign ceased to be enforced.

In the vast amount of literature on the results of the anti-alcohol campaign the major emphasis is made on its impact on mortality. There are also some publications where analysis of the campaign's impact on the revenues, financial instability and, as a result, on social upheaval, is undertaken. Finally, there is also certain amount of works studying campaign's influence on various aspects of social life such as crime rates, work and family. However, there is absolutely no thorough research on the anti-alcohol campaign's impact on fertility.

In one of the rare papers that touch upon this connection (Rimashevskaya and Milovidov 1988) the impact of anti-alcohol campaign on fertility increase is acknowledged however no mechanism or scope of such an impact is ever brought up. Klupt (2008, 317) briefly mentions the possibility for the campaign's impact on fertility rise referring to the "hope of women for correcting husbands' drinking" as a link.

It is quite possible to imply the possible impact of the mentioned social changes brought up by the anti-alcohol campaign on fertility. Improvement of relations in family life, reduction of crimes and diminishing so suicide rates definitely could have impacted fertility to a certain extent. Though the magnitude of this impact has not been researched there is a reason to believe it could hardly led to such a significant increase in fertility as it happened in 1986 and 1987. For instance, one of the possible social reasons for certain fertility increase could have been the reduction in female suicide after implementation of the anti-alcohol campaign. But it, most likely, has a very limited impact on fertility since, according to the account of Wasserman, Varnik and Eklund (1998), the attributable fraction of alcohol for female suicides (and also female violent deaths) are just 27 percent, or some half of the ones of the males. And not all of these suicides are made by fertile aged women.

What also casts doubt in a the explanation of a huge increase in fertility in 1986 and 1987

by this single factor (an anti-alcohol campaign) is the fact of an abrupt reversal of the demographic trend right in 1988 while anti-alcohol campaign has gradually slowed down and then reversed in the second half of 1987 and 1988.Summing up, existing explanations fail to account for three things in the phenomenon of fertility increase from 1981 to 1987.

First, the question remains of why there was a substantial fertility increase in 1981 while an announcement on the perspective introduction of population policy measures came up this very year, the regions where these measures are going to be introduced were not specified and, eventually, they were implemented this very year just in several regions with tiny chunk of population? Second, why in all countries that experienced population policy implementation fertility went down after 3 to 5 years of its increase while in the USSR, instead of going down, birth rates were leveled off for two years? Finally, the third question implies sound and justifiable explanation of the further increase of fertility at 1986 and 1987.

Explanation that encompasses uncertainty reduction premises fills that gap and provides a coherent explanation of fertility dynamics at that period. Here is how the explanation employing this very theory sounds. In 1981, the year when erosion of "social contract" became especially evident, fertility has increased as a compensation of related uncertainty. This increase was enhanced by the introduction of population policy and shifting of births to younger ages. After three years of fertility rise it should have moved down as is the case all countries where pronatalistic population policy was implemented. However, the impact of the instability related to erosion of "social contract' did not allow fertility to "bend"; it just has leveled off instead. Then, in the next couple of years, fertility has continued its upward trend as a result of further erosion of "social contract", possibly, being also enhanced some by the anti-alcohol campaign.

Hypothesis 2 is about the prevalence of economic deterioration factor over the increase of sociopolitical instability in affecting fertility. As clearly seen from the Diagram 3, it went into a steep decline in 1988 and remained that way into the very end of the 1990's. There are two alternative explanations to this phenomenon.

Let's start with the first of them. The bulk of this explanation is that policy has affected timing of births by enhancing procreation at earlier ages and narrowing intergenetic (birth) intervals, thus causing a drop in fertility later on, at the time when these births would have "normally" occur.

For the purposes of assessing a theoretical hypothesis on population policy's distant

consequences having an impact on fertility decline at the early 1990-s and later period, two points are of primarily interest. First, to what extent the increase of fertility was caused by policy measures? And, second, to what extent enhanced fertility could be attributable to tempo effect (giving births at earlier ages and narrowing birth intervals), and to what degree this increase was related to change of quantum of births? Indeed, for assessing the plausibility of hypothesis on a compensatory drop in fertility at the years following the decade of policy implementation, one has to be positive, in first place, on the attribution of the most of demographic change to introduced policy measures' impact and, secondly, on the prevalence of a timing of birth change effect.

First assumption was addressed in previous section. The main premise of this notion was that though the increase of fertility in early 1980-s were widely hailed as the evidence of population policy impact, there is reason to believe the trend was already on the way. The implication of this part of analysis for the assessment of a compensatory post-policy fertility decline explanation is the following one: with having reasonable support for partial fertility increase being attributable to not just a policy effect, the scope of this explanation diminishes.

As for estimating the influence of population policy in regards to affecting quantum and tempo of fertility, there is largely a consensus among demographers about the latter having been impacted the most. Avdeev and Monnier (1995, 26-28) have estimated population policy's quantum effect at the level of 2 to 15 percent (for various cohorts) of the overall completed fertility. Archangelsky (2006, 35) assesses the "surplus" of births due to policy's measures in the amount of 0.1-0.2 children for the cohort of women born in 1953-1957, the one with most affected quantum of fertility. Zakharov (2006, 45) provides an estimate of actual additional births (not related to just change in timing) as of 3.6% of the total number of newborns.

Of great importance for assessing the hypothesis on the compensatory drop in fertility in the years following its initial rise after introducing population policy, is the analysis performed by Zakharov (2006). Based on comparison of actual and synthetic (conditional) cohorts, it allowed for not only discriminating tempo and quantum effects of population policy but also helped to estimate latter's impact on order of births and other changes in demographic behavior at different cohorts.

Among major findings of this analysis are the following ones. Changing of the timing

of births, that is the main impact of population policy, have included further shift of the first birth toward younger ages and narrowing of the intergenetic (birth) intervals. Policy had little if any effect on reducing percentage of childless families, with their share in the total number of families staying at some eight percent. The probability of the second order births had significantly increased, especially at the early reproductive ages. Three was also some increase of the probability of third order births (around 2-3 percent), especially at the ages over thirty years old (cohorts of 1945-1954 years of birth) and among those reaching this age before the year of 1990. There is no statistically significant increase in the births of fourth and next orders.

So, one of the major policy's impacts were enhancing number of families with two children, the trend that was already on the way. As mentioned before, most of this "surplus" reflected in the rise of total fertility rates, is attributable to changing of tempo of births. The differences in fertility behavior between cohorts have also manifested themselves, as demonstrated by the analysis. Cohorts of women born in the first half of the 1950-s, the ones facing the decision to give births "now" or "never" at the time of population policy implementation, had the greatest share of additional quantum of fertility. Generation that belongs to second half of the 1950-s years of birth and the ones born at the beginning of the 1960-s (they were in their twenties at the time of policy measures introduction) have mostly changed their calendar of births. Finally, generations of the youngest women born in mid-1960-s and later, are typified with having a very early start of procreation activity and a deep drop in fertility at the middle reproductive ages.

Zakharov, assessing these findings, don't deny the possibility of social and economic crisis affecting this drop in the 1990-s. However, he equally emphasizes the impact of changing fertility tempo consequences (2006, 48-49). As one of the arguments in favor of this point of view he brings the following evidence: steep fall of fertility among women belonging to cohorts1960-1965 years of birth that started at 1989; slowdown of family formation for the cohorts born at the first half of the 1950-s at mid-1980-s and for the cohorts of 1959-1960 years of birth – at 1988. Zakharov stresses the fact that these slowdowns and steep decline in fertility have happened before the beginning of systemic crisis at the early 1990-s and views it as an evidence of changing timing of births being a major cause of the drop in TFR.

In assessing these conclusions one has to agree there are definitely several factors affecting fertility decline in Russia, consequences of changing tempo of births being one of

them. As demographers stress, there is no way to discriminate these effects by providing exact statistical estimation of each factor's contribution. Acknowledging the definite role of fertility tempo changes effect on decline of birth rats, I'd like to provide a qualitative assessment of the magnitude of alternative factors' impact (in the context of this very part of discussion, it is mostly the role of social and economic crisis).

First, the scope of changing tempo of births impact on further decline of fertility is limited by the fact that some of additional births, as mentioned earlier, are not attributable to the implementation of population policy. With its amount not exactly defined, this chunk of additional births that is not attributable to policy's impact could not be encompassed by an explanation related to consequences of changing timing of fertility. Indeed, tempo-related explanation works only for those affected by population policy.

Second, the core assumption of tempo-related explanation is that births occurred earlier due to implementation of population policy, would have otherwise took place later, according to a "normal" pace of fertility. But it is equally plausible to assume that, being delayed in the absence of policy measures, these births would have never occurred anyway because of the start of systemic crisis in Russia in the 1990-s. If this very scenario had been unfolded, fertility decline would not demonstrate the same steepness but the total fertility rates would be still similarly low.

Finally, one of the arguments in favor of tempo-related explanation of the drop of fertility is the one based on data on actual cohorts' birth rates. As mentioned before, this data demonstrates fertility decline at different cohorts have happened at the second half of the 1980-s, before the start of transformational crisis in the USSR/Russia. Indeed, collapse of the state, breakdown of social and economic system, collapse of such institutions as social security and medical insurance and inflation in four digits numbers have happened in the early 1990-s. However, signs of severe social and economic crisis have already manifested themselves in the late 1970-s but have significantly accelerated in the late half of the 1980-s.

As previously noted, Cook (1993) came up with a concept of a social contract between elite and population in the USSR. It has included stability of prices, guaranteed employment and provision of pensions and free medical care. Deterioration of this contract took place in the second half of the 1970-s and its breakdown took place in the late 1980-s (Cook, 1993).

Rising levels of "repressed" and "hidden" inflation characterized the economy of the

late seventies and early eighties. The results of repressed inflation included persistent shortages of consumer goods, a steady increases in the ratio of collective farm market prices to state retail prices for comparable goals, rapid increases in the populations savings, proliferation of gray and black markets, growing corruption and, eventually, formal and informal rationing. Though shortages of goods were present in the Soviet economy most of the time and are considered to be the built-in trait of a command economy, in late seventies they have affected also some goods that were previously in surplus. The lines have increased. Poor harvests exacerbated food supply problems, and in 1981 formal rationing was instituted for some goods. Chronic shortages and unsatisfied consumer demand provided fertile soil for the growth of a "second economy". Those directly engaged in black market actively, both bribing and bribed, became recipients of an unofficial, unrecorded income. The official wages grew at that period, but at a slower rate.

There were certain deteriorations in the delivery of other important elements of the social contract such as welfare, medical services and childcare. Poorly trained caregivers, along with shortages of childcare, resulted in grandmothers taking care of children. The pattern of stagnation and decline was repeated in the area of health care. In the early eighties expenditures had dropped to a negative per capita growth rate, with health conditions significantly worsening. Brezhnev was able to fulfill the social contract-though at a declining level of performance-until 1981. After that period per capita spending on critical social services began to decline.

From 1986 through 1988 Gorbachev initiated or pronounced intent to institute policies that threatened to undercut the basic provisions of a social contract in all major policy areas: employment security, wage equality, price stability and socialized services. Changes in industrial policy began to erode employment security and stability, heightening demands for productivity and the prospect of displacement. A wage reform, which increased differentials among skill grades, was also introduced. In addition, legitimization of a limited cooperative sector began to weaken state control over consumer prices and challenged the monopolistic position of state enterprises in the consumer sector. Proposed price reforms threatened state subsidies and other necessities.

In the context of this discussion it is important to look at the wage dynamics at this period. The idea of wage reform was to diminish egalitarian distribution of income and to tie

wages with quality and productivity. In many enterprises the reform produced labor productivity gains and cuts in the labor force. This did not necessarily lead to unemployment because of the creation of new jobs and possibility to enter them. Through 1987 overall increases in industrial productivity exceeded wage increases. The greater differentiation in wages and their higher correlation with productivity were introduced by the reform.

In 1988, however, the impact of reform policies on wages markedly weakened, as the workers used new political freedoms to strike against lowering their wages. Though the strikes weren't massive, the government mostly stuck to the social contract and forced managers to comply with workers' demands. Also, by late 1988 industrial managers were also motivated to increase wages because of inflation in the consumer economy. Thus the drop of wages in 1987 was followed by their increase.

The broader instability related to the deterioration of a social contract could be found in the emergence of the threat in possibility of linking wages and employment with productivity. This possibility was later reversed. Reform policy did result, however, in some erosion of labor's social contract guarantees: some workers were released from their jobs, other experienced loss of wages, and many experienced unaccustomed economic insecurity. But by early 1989 new decisions or concessions had limited the painful effects for workers: factories were allowed to reabsorb released workers, bankrupt enterprises were bailed out, wage discipline was relaxed, privatization was severely limited, and retail price reform was indefinitely delayed.

The similar retreat from the initial reforms threatening other provisions of a social contract had happened in 1988-89. According to the new law, subsidies should be slashed to unprofitable state enterprises, with the goal of reducing subsidies to the loss-making plants by 30 percent in 1989. However, this hard decision was delayed several times and, in fact, industrial subsidies in 1989 and 1990 actually increased. Other important decision was related to the restructuring of the health sector including privatization of some medical services and creation of medical cooperatives. According to the plan, the paid services would have affected only about two percent of medical services over the next fifteen years. The legalization of cooperatives was formalized by the adoption of Law on Cooperatives on May 1988 and by the Fall, 1988 medical cooperatives were rapidly developing. The results of the cooperatives' establishment were mixed and included public complaints about abuses and corruption in that

sector.

Severe economic crisis had exploded in the U.S.S.R. in 1989 and culminated in 1990. This crisis had progressed and by 1990 it looked like the economy would disintegrate altogether. The reason for this crisis were reforms themselves that led to growing monetary imbalances, aggravated fiscal imbalances, an administrative stalemate, calamities in foreign trade, a decline in price stability (severe inflation) and shortages of the most basic goods.

So, it cannot be ruled out that to a certain extent fertility drop in the actual cohorts were caused by these very signs of social and economic crisis that, according to the provided analysis, have started to aggravate before the transformational crisis of the 1990-s, at the second half of the 1970-s and, to a much greater extent, at the late 1980-s. Total fertility rates have showed some increase in the 1980-s largely due to changing of birth calendar as a result of population policy implementation, but relatively steady decline in fertility decline in actual cohorts could be a more of a long-term reaction to the accelerated social and economic crisis.

Based on provided three arguments, it is possible to conclude that, along with definite impact of the timing of births on fertility decline, there are many reasons to believe in the significant role of the impact of other factors, crisis being one of them. Next section explores the role of these alternative factors brought up for the remaining explanations of lowest low fertility in Russia.

Transformational Crisis or Second Demographic Transition?

As mentioned earlier, decline of fertility in Russia started most recently in 1988, have dramatically accelerated since 1990. Coincidence with the start of transformational crisis provided grounds for establishing causation between two phenomena.

Transformational crisis in Russia was multifaceted. It was manifested, first of all, in the overwhelming economic disaster. National economy literally went into a tailspin, with gross domestic product started to decline at a rate of 17 percent in 1991, and at even higher rate since. In 1995 poverty rate was estimated at the level of 26 percent of the total population. Inflation have reached the record rate of over 2, 000 (!) percent in 1992. Most of amassed monetary savings of people was thus blown away. Non-payments of wages became common practice even at profitable Russian enterprises. Also, in some cities in the early 1990-s food coupons were introduced because of scarcity of even most basic foods.

Radical structural transformation also took place at that time. Lots of manufacturing facilities were closed and many new businesses dealing with trade, investment and finances have emerged instead. That gave a reason to a sociologist Michael Burawoy for defining the developing mode of production a "merchandise capitalism". Massive privatization of state owned property was exercised at that time. Staged collateralized auctioning allowed for allocation of huge assets in the hands of a tiny circle of new oligarchs, cronies of political elite members.

Along with emerging of new classes like businessmen, racketeers and private security services, traditional well to do strata like physicians, teachers, research fellows and qualified workers have increasingly found themselves not being in demand (and, thus, moving beyond poverty line).

Transformational crisis has also carried a political dimension. In 1991 USSR was dissolved, and that have led to quite a few global implications including types of relationships with newly formed independent states, formerly Union republics. Among problems related to this development were the ones with Russian-speaking populations in these states and the painful dissolution of "imperial consciousness". New forms of political activity including participation in civil movements and newly formed alternative parties have emerged as well.

Many ideational changes were also associated with this ongoing transformation. It was a radical break with what referred to as "socialist greenhouse" ideology (Sobotka, 2002, 41-46). There were no longer such things as guaranteed employment and free access to medical care. This break was even more pronounced given that leading reformers of the 1990-s, E. Gaidar and A. Chubais, were guided by experience of liberal economic policies conducted by M. Thatcher and R. Reagan, with their emphasis on leizzer-fair, minimal level of state support and reliance on individual. Implementation of these practices in Russia was accompanied with unfair and corrupted privatization and has generated strong ideological resistance on the part of broad segment of population. Society was marked with huge polarization between those accepting new values (that still differed significantly from their Western counterparts) and those who did not.

Ideational changes that took place during transformation in Russia have also included the ones directly related to demographic behavior. Those are the values reflecting permissiveness on sexual norms and behaviors including non-marital births and living in

consensual unions. Acquiring these values was a sharp breakaway with Puritanism professed by official Soviet propaganda.

It is important to mention that the period of interest (from 1990 to nowadays) was not homogeneous in regard to described changes. In mid-1990-s first signs of moderate economic growth have showed up. Financial crisis and default of 1988 interrupted this trend for sometime. However, by the turn of decade (and millennium) the trend was reversed and economic growth have significantly accelerated on the wings of skyrocketing oil prices and implemented market reforms. Not only shortages of basic goods were over in most of the large cities of Russia but also new opportunities have emerged as well. One of them, long-term consumer loans and mortgages that were introduced in early 2000-s, became available for many citizens. New employment opportunities, especially in big cities, have resulted in creation of a tiny but steadily growing middle class.

The question that divides demographers in regard to providing an explanation of the emerged lowest low fertility in Russia is whether major reason for the phenomena was the period effect of the transformational crisis, or it was rather long-term trends of changing fertility behavior due to the spread of new values conducive to Second Demographic Transition that had the greatest impact? With general consensus that both factors matter, the question is which of them prevails in impacting Russian fertility phenomena. Also, to what extent this factor prevails.

Let us start with analysis of the extent Second demographic Transition (SDT) theory is applicable to post-communist Russia. I'll break this analysis into two parts. In first one, I'll speculate on applicability of the general premises of the theory including ideational changes in their relation to structural changes in society. In the second part I'll examine interpretations of fertility behavior in Russia in regard to major manifestations of this behavior described by SDT theory.

Major premise of this theory, as well known, is the explanation of changes in demographic behavior by huge shifts in the prevailing societal values. Van de Kaa emphasizes these new values of "postmodern epoch". Among them he mentions "…the overwhelming preoccupation with self-fulfillment, personal freedom of choice, personal development and lifestyle, and emancipation…" (Van de Kaa, 1996, 425). European Value Survey conducted in the Northern, Eastern and Southern parts of the continent have confirmed connection between

new models of demographic behavior and such conducive to SDT theory's values as stress individual autonomy, weaker civil morality, world orientation, and tolerance toward minorities, self-fulfillment and other postmaterialist values (Surkyn and Lestaeghe, 2004, 54).

Van de Kaa stresses relationship of these values' emergence with social, economic and structural conditions of societies: "Rising incomes and the economic and political security which democratic welfare states offer their populations has helped trigger a 'silent' revolution", a shift in a 'Maslovian' post-materialism direction where an individual's sexual preferences are accepted for what they are, and decisions on cohabitation, divorce, abortion, sterilization and voluntarily childlessness are largely left to the discretion of the individuals and couples involved" (1996, 425).

To what extent Russian society matches the criteria of postmaterialism that is a prerequisite for the emergence of described value shifts? In first place, postindustrial societies are typified with the prevalence of service economy sector. This is definitely not the case with Russia even nowadays, with lion share of the state profits being generated from the sales of natural resources. Russia in the 1990-s definitely was not a welfare state offering economic security to its citizens, the one Van de Kaa was referring to in regard to Second Demographic Transition. Structurally, middle class is claimed to be the "modernized part of population", thus, "type of its marital behavior shares European and American pattern" (Srednii Class, 2008, 39). According to results of the survey conducted by Independent Institute for Social Policy, the share of middle class has constituted 20 percent of country's active population in 2000. Some estimates of the same category for 1998 is 9.4 percent and for 2006 – 22 percent. In rural areas of Russia the share of middle class is estimated at the level of 13-15 percent (Srednii Class, 2008, 39).

What is equally important of assessing the possibility of widespread transition to new demographic behavior in Russia is the level of polarization in society. According to data published by Roskomstat (Russian Committee for Statistics), in 2007 incomes of top 10 percent of population have 16, 8 times exceeded the ones of bottom 10 percent. Overall, Russian social structure resembles the one Europe had forty-fifty years ago (Srednii Class, 2008, 39). At this very time, a period of 1955-1965, for the most European countries SDT had yet to come.

This is not to be said that economic and structural conditions in Russia rule out the fact of SDT took a start in Russia. Rather, the point is that given these conditions, there is, most

likely, a very tiny segment of population in nowadays Russia (and even more so in the 1990-s) that fully acquire values conducive to the ones described by SDT theory. This very segment is mostly concentrated in big cities, growing regional centers and oil rich cities. It is likely that with increase of cities' development and overall modernization of the country this chunk of population will increase.

I would go beyond purely structural analysis given the fact that the values could to some degree trickle down to lower strata, outside of statistically defined boundaries of middle class. I'd like to speculate on the very values conducive to SDT: to what extent they are shared by the "demographically advanced" group, Russian middle class? As seen from the list of these values cited above, it is quite a heterogeneous group. The question of which of these values were internalized in Russia, and to what extent, merits special research. In the absence of that, I'll try just speculating on the topic.

Tolerance toward minorities is definitely not the value in great supply in Russia. Killings of foreign students with different color or just from different ethnic groups by skinheads became a common practice in quite a few cities of Russia, St. Petersburg being first among them. Sobotka cites characterization for all the post-Soviet states that include existence of such traits as "…xenophobia and authoritative nationalism" (2002, 50).

The idea of such values as self-fulfillment, freedom of choice, personal development and individualistic lifestyles being acquired in full by the broad segments of Russian population has been qualified by a prominent demographer as being "out of touch with reality" (Klupt, 2008, 323). Indeed, unfair allocation of the most attractive assets in the hands of elite's inner circle, widespread corruption, authoritarian type of modernization undertaken by President B. Yeltsin, as well as domination of criminals in economic structures don't contribute to self-actualization and enjoyment of freedom. However, there are certain shifts in the direction of spreading of those values. Plurality of the forms of ownership provided certain choices for individuals. Ability to earn more money created stimulus for hard work and education, those accumulated wealth started, in accordance to Mazlow, thinking of higher forms of human existence like self- actualization.

One value related to freedom and self-expression, however, has not only emerged but became dominant. That is consumerism. Actually, drive for consumerism has appeared before 1990. In discussion, provided on that issue, Sobotka (2002, 57) cites a point of view linking

collapse of the Communist regimes with their inability to satisfy consumer demands. With gradual rise of supply of goods in the second half of 1990-s not only demand for them was matched but the whole culture of consumerism have emerged and expanded in Russia.

Summarizing this part of discussion, one can conclude that not only economic and structural conditions of Russia have limited the advance and scope of SDT but the very uneven internalization of various values conducive to the initiation of new demographic behavior, most likely, have made a mark on its advance.

Let us turn to the analysis of SDT theory's manifestations of demographic behavior in Russia. Following features of such behavior are defined: increase in the numbers of consensual unions; increase in proportions of non-marital childbearing with an accompanying increase in the mean age at childbearing outside marriage; decline of induced abortions and increase in use of modern contraception; change in the position and shape of distribution of birth by age including shift in the share of teenage fertility; increase of the mean age of legal marriage, mean age at giving first birth, and mean age of maternity.

Let us start with analysis of the first two features. Russia in the 1990-s have demonstrated relatively high and still growing rate of cohabitation. Higher prevalence of cohabitation of the women aged 20-24 and 25-29 in comparison with many other Eastern European countries, with tendency of increase, is presented by Sobotka (2002, 33). consensual union at age 25-29. Also, a definite change towards increased non-marital childbearing coupled with higher prevalence of cohabitation is clearly the trend for three countries, Russia being one of them.

These trends could well speak in support of SDT start in Russia. However, both spreading of cohabitation unions and increase in the share of non-marital births could equally reflect severe economic and social conditions. Klupt (2008, 320) emphasizes the movement of significant share of incomes into economic "shady" areas that, along with weakening of legal system, have led to diminishing of the role of marriage institution as the one securing provision of material support from the former husband for rearing a child. Author also stresses that despite commonalities in changes of sexual relationships between Russia and Western Europe, their impact on fertility differed. While in most Western European countries non-marital fertility is almost equaled the one in legal marriages (due to favorable economic conditions for rearing a child by a lone mother), the spread of cohabitation unions in Russia have resulted in

overall fertility decline. So, increase in number of couples living in cohabitation unions and the number of non-marital births, most likely, reflect the impact of two major factors: first, spreading of new sexual norms conducive to SDT and, second, devaluation of the institution of marriage due to transformational crisis.

As for the third manifestation of SDT, there is strong evidence that Russia have definitely demonstrated decline in induced abortions and relatively high rate of using modern contraception (mostly IUD). With TIAR level of 2.08 in 1999, Russia still has the high rate of induced abortions, perhaps highest among countries of Central and Eastern Europe including former Soviet republics (with no data available for Ukraine). But consistent trend of gradual decline since second half of the 1980-s is evident: 3.66 percent in 1985, 3.31 percent in 1989, 3.05 percent in 1990, 2.62 percent in1995, 240 percent in 1997, 2.24 percent in 1998 and 2, 08 percent in 1999.

Induced abortions decline is a more unambiguous indicator of SDT that increase in living in consensual unions. The latter could point out for both the start of demographic transition and for the impact of transformational crisis as well, while decline in induced abortions and increase in the use of modern contraception clearly speaks of the signs of long-term processes like SDT expansion.

Postponement of marriages and parenthood is viewed as the main feature of the SDT (Lesthaege and Moors, 2000, 124). The importance of timing change in fertility is emphasized, in particular, by Sobotka (2003). He notes that postponement of childbearing depresses the TFR to lower level than the one it would have reached in the absence of timing changes. So, for the explanation of the extent to which TFR decline is attributable to postponement of births (the main feature of SDT) is essential for a given discussion.

Russia has demonstrated a trend of increasing of the ages of both marriage and parenthood, as for the first order births, as well the mean one. It was not as pronounced, though, like in most countries of Central and Eastern Europe. And, as with the share of those living in cohabitation unions, this indicator could be interpreted both as a sign of the SDT advance, as well as a manifestation of economic crisis. Klupt, for instance, mentioned possibility of this postponement being partially attributable to the "behavior of young women from depressive regions that performed several abortions before the birth of a first child, and have postponed those latter due to lack of permanent job and reliable partners" (Klupt, 2008, 322).

However, there is an indicator designed to split "real" reduction in fertility level (quantum) from the one caused by *timing* effects: it is adjusted total fertility rate introduced by Bongaarts-Feeney. According to it, there is a clear division in the major "contributors" to low TFR across Central and Eastern European countries. While in Hungary and Czech Republic the decline of TFR was mainly attributable to the timing effects (the *tempo* component) and in Baltic States, Poland and Slovakia the impact of calendar of births was also quite substantial, in Bulgaria, Romania and Russia tempo effect in TFR was very modest: correspondingly 30, 20 and 16 percent. So, for Russia quantum component of lowest low fertility was the prevalent one, and that speaks in favor of a limited effect of SDT.

What seems very insightful for assessing degree of Russian fertility trends' universality is the "two layer model" proposed by Sobotka (2002, 2003). According to it, the split between Central and Eastern European countries in regard to described above differences in types of demographic behavior and patterns reflect the pace of implemented reforms. Countries that have underwent smooth transition to market economy (Chezh Republic, Slovenia, Poland and Hungary) demonstrate greater signs of acquiring fertility behavior conducive to SDT (which is reflected in prevailing influence of birth postponement on the decline of TFR). Second category experienced economic and societal near-collapse in the course of transformation and thus demonstrate emphasis on survival values. Thus major factor in TFR decline for these countries was the quantum effect not related to timing effects of postponing births. So, impact of SDT (for which postponing births is one of the major indications) was not so pronounced for the countries of second category that includes Bulgaria, Romania and most post-Soviet states, including Russia.

Summarizing this discussion, it could be concluded that there are clearly indications of SDT have indeed started and generated an impact on fertility in Russia. However, at the period of interest (1990 to nowadays) its impact seems to be relatively insignificant. Here are the major arguments in favor of this point of view based on provided discussion:

First, level of country's modernization and the corresponding social structure typified with tiny portion of "demographically advanced" middle class, assume significant limitations for fertility behavior conducive to SDT;

Second, the societal values that generate SDT were not evenly acquired: some of these important values were shared only by very small segments of population;

Finally, various manifestations of fertility behaviors conducive to the ones described by SDT theory, differed in degree of acceptance. While some of them (decline in the induced abortions, increase in the use of modern contraception) demonstrated significant dynamics, others, like the most important one, delaying of first and other births, were not as pronounced. Most of TFR decline was attributable *to quantum* rather than *tempo* effect.

There are several other factors that, along with the provided above indirect indication in favor of the possibility of a strong impact of transformational crisis on lowest low fertility, also suggests of this very explanation. One of them being the fact that SDT that took place in most Western European countries have not caused such prolonged and steep decline of fertility (except for Germany, Italy and Spain for the special reasons discussed above). However, for the countries that underwent transformational crisis, there are striking similarities in steepness and duration of fertility decline.

Other indirect evidence of demographic behavior's sensitivity to economic situation is the drop in fertility in Russia in 1999, right after financial default of 1998. Shortly after the start of financial and economic recovery TFR gradually started to climb. Also, evidence in favor of significance of economic crisis impact on fertility is supported by the data of sociological survey conducted by VTsIOM (the Russian Center for Public Opinion Research). According to it, in the first half of the 1990-s people cited the decline of living standards, unemployment and other factors that are directly tied to the economic crisis among major reasons limiting the desired number of children in a family (Kashperov, 2004, 61).

The undertaken discussion allows for defining economic crisis and instability to be the primary reason for a steep fertility decline in the USSR/Russia starting 1987. What is important here is that during this very period there were also plenty of sociopolitical instabilities as well. For instance, the shooting of the opposition dominated parliament upon the order of President B. Yeltsin in 1993 or elections of the 1996 when Communists were about to come to power (that could have reversed economic and political reforms), to name but a few. However, none of these sociopolitical instabilities not directly related to the economics, has reversed fertility levels going down or even slowed down the process' steep decline. It could point out for the prevalence of the economic factors when they are associated with the severe deterioration of standards of living over any kind of symbolic uncertainties' effect when it comes to affecting fertility dynamics.

5. Conclusion

In the course of a current research the impact of certain types of societal instabilities on fertility was demonstrated. This is true in regard to such a strong type of instability as erosion and deterioration of such a basic institutional provision as "social contract". It is very plausible that such a strong type of instability was the reason for the increase of fertility that is conducive with uncertainty reduction theory. It was also clearly demonstrated that economic downturn that results in severe deterioration of living standards and conditions and related economic instability have a decisive impact on the steep decline of birth rates regardless of the simultaneous presence of sociopolitical instabilities.

References

Alisina, A. and R. Perotti. Income Distribution. Political Instability and Investment.// Working Paper #4486.

Archangelsky, V. 2006. Factori Rozhdaemosti (Factors of Fertility). Moscow, TEIS.

Avdeev, A and A. Monnier. 1995. A Survey of Modern Russian Fertility.// "Population". An

English Selection. Vol.7.

Cook, L. The Soviet Social Contract and Why it Failed: Welfare Policy and Workers' Politics

from Brezhnev to Yeltsin. 1993. Cambridge, Harvard University Press.

Friedman, D., M.Hechter and S. Kanazava. 1994. A Theory of the Value of Children.//

"Demography" 31(3): 375-40.

Geronimus, A. On Teenage Childbearing and Neonatal Mortality in the United States.//

"Population and Development Review". 1987, #13: 245-279.

Kashepov, A. Socioeconomic Determinants of the Demographic Situation in Russia. // "Russian

Social Science Review", 2004, vol.45, #2: 59-82.

Klupt, M. Economicheskoye izmerenie Demograficheskoi Dinamili. 2008.

Klupt, M. Demografia Regionov Zemli (Demography of the Regions of the World). 2008, "Piter".

Lesthaeghe, R. and G. Moors. Recent rends in Fertility and household formation in the Industrial World. // "Review of Population and Social Policy". 2000, #9: 121-170.

Palloni, A. Assessing the levels and Impact of Mortality in Crisis Situations.//CDE Working Paper 87. 1990

Perelli-Harris, B. Ukraine: On the Border between Old and New Uncertain Times.// Demographic research, 19:29, pp. 1145-1178. 2008.

Safranko, A. and R. Bealer. Unbalanced modernization and Domestic Instability: A Comparative Analysis. Sage Publications/Beverly Hills/London. 1972. Pp. 7-65.

Sobotka, T. Re-Emerging Diversity: Rapid Fertility Changes in Central and Eastern Europe after the Collapse of the Communist Regimes.// "Population", 2003-4/5. Vol.58: 451-486.

Srednii Class. (Middle Class). // "New Times", 2008, #10(56): 38-40.

Surkyn, J. and Lesthaeghe R. Value Orientations and the Second Demographic Transition (SDT) in Northern, Western and Southern Europe: An Update // Demographic research Special Collecton 3, article 3 published April 17, 2004. // http: www.demographic-research.org

Van de Kaa, D. Anchored Narratives: The Story and Findings of a Century of Research into the Determinants of Fertility // "Population Studies", 1996. Vol. 50, #3: 389-432.

Zakharov, S. Demographicheskii Analiz Effecta Mer Semeinoi Politiki v Rossii v 1980-h Godah" (Demographic Analysis of the Family Policy Measures Effect in Russia in the 1980-s). // "SPERO", #5, 2006: 33-69.

Zakharov, S. and E. Ivanova. Fertility Decline and recent Changes in Russia: on the Threshhold of the Second Demographic Transition. // In "Russia's Demographic Crisis".- Edited by J.deVanza.

Zakharov, S. Demographic transition and Generations Replacement in Russia,/ Vorposi statistiki: 3-12 (In Russian).

Zakharov, S. Demogaficheskii analiz effect mer demograficheskoi politiki f Rossii v 1980-h godah,// "Spero", #5, Winter 2006, pp.33-69.

Zakharov, S. Russian Federation: From the First to Second Demographic Transition. / Demographic Research, vol. 19, article 24, pp.907-972. July 2008.