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CONTENTS

STUDIES

COMPARING DESIRED FERTILITY AND PERCEPTIONS OF MOTHERHOOD IN GERMANY AND FRANCE

KERSTIN RUCKDESCHEL*

ABSTRACT: *There are marked differences between France and Germany in terms of fertility levels, which may be traced back to differences in family policy frameworks and to a diversity of normative expectations as to the role of women and mothers. The influence on desired fertility in both countries exerted by these structural and cultural differences is examined using data from the German and French Generations and Gender Surveys (GGS) of 2005, with western and eastern Germany analysed separately. The results show that attitudinal differences between western Germany and France are less pronounced than those between western and eastern Germany. When it comes to childless persons, cultural factors exert a significant influence on desired fertility. Affirmation of the traditional housewife role has a positive effect on desired fertility in both countries, while there are indications that a negative attitude towards working mothers has a negative effect in western Germany. Structural factors such as labour force participation of both partners also exerts a negative influence on desired fertility among western German mothers, but only when their children are young.*

1 INTRODUCTION

France has had a higher birthrate than Germany for decades, and whilst the total fertility rate of France has fluctuated between 1.9 and 2.0 children per woman since 2000, the corresponding figure for Germany is 1.3–1.4 (Eurostat 2010).

One decisive factor explaining this is said to be the higher preponderance of working mothers in France (see for instance Köppen 2006; Bertram *et al.* 2005; Onnen-Isemann 2007). Conditions enabling reconciliation of work and family life are indeed much more favourable in France than in Germany, especially western Germany. Family policy in Germany has worked towards improving reconciliation in recent years, holding up France (among other countries) as a particular role model. Nevertheless, there have been repeated objections that

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structural opportunities in France are more favourable, and that the normative expectations there as to the role played by women, and by mothers in particular, are not comparable with those found in Germany (Fagnani 2002). Accordingly, it is not only the structural framework which makes it easier for French mothers with small children to work, but also the normative one, as working mothers are more readily accepted in French society. In short, they do not encounter a conflict between the goals of 'work or family' at a normative level like most German women do (see Section 2.3).

The differences between Germany and France may therefore be described in two ways: in the structural context and in the societal climate. A large number of studies have described the influence exerted by the structural framework (see for instance Becker 2000; Fagnani 2002; Reuter 2002, 2003a,b; Schultheis 1998). By contrast, the influence exerted by attitudes and values typifying the overall societal climate is still relatively under-researched; one exception being the qualitative study of the Max Planck Institute for Demographic Research (MPIDR) in Rostock and the *Institut national d'études démographiques* (INED) in France (e.g. Salles *et al.* 2010).

This paper will therefore discuss the effects of different attitudes towards working mothers on the decision to enter into parenthood, taking into account opportunities to reconcile work and family life in the two countries (see also Ruckdeschel 2009). As such, we first compare the welfare state and family policy contexts in both countries, and then explore the differences in the cultural models, thus deriving the hypotheses for this paper. Since there are still considerable differences between the territories of former West and East Germany, particularly with regard to the questions under consideration, the two regions will be dealt with separately. After an overview of the data and the sample, the results of differences in attitude and different labour force participation models of both partners will be described. These will then be examined in a multivariate model to demonstrate influence on desired fertility.

2 COMPARING THE STRUCTURAL AND SOCIAL CONTEXTS

2.1 Welfare state contexts

Opting for a first child (and also for another child) can be understood as the result of a decision-making process.[1] This is influenced by individual preferences and psychosocial dispositions on the one hand, and external contexts on the other. Being the focus of this paper, these contexts include

[1] There is also the possibility of unplanned births, which is not considered here.

cultural, economic and socio-structural opportunities and restrictions, and also the welfare state with its specific family policies.

According to the classical welfare state typology, which distinguishes between liberal, social democratic and conservative–corporatist regime types, both France and Germany can be attributed to the conservative–corporatist regime type (Esping-Andersen 1990; see below also Reuter 2002). Three criteria are central to Esping-Andersen's classification: the degree of decommodification, i.e. the degree to which the welfare state reduces the commodification of work by means of social rights, the structuring of social inequality determined by the welfare state, and the relationship between market, state and family in the production of social services. Compared with the liberal and the social democratic regime types, the welfare state intervenes at a medium level in France and Germany. In the conservative–corporatist regime type social security is largely obtained via gainful employment, and is hence dependent on the market as well as on status. Nevertheless, the family plays a major role in providing social security, given that subsidiarity applies as a matter of principle. The perception of the family in welfare states of this type has a traditional orientation and the model of the male breadwinner is supported. The inclusion of France within this group is disputed, however, because of its support for working mothers, which stands in opposition to the ideal of the classical conservative welfare state. In gender studies, Esping-Andersen's typology was often criticised because it disregarded the relationship between the gender and the family, and an expansion of the model was called for.

In response, Esping-Andersen included the degree of defamilialisation which describes the dependence of individuals on the family (Esping-Andersen 1999). In the end though, he upheld the considerable affinity between France and Germany, even after expanding his model. Several attempts have been made to systematically include the gender dimension[2], but even so it remains difficult to assign France to any category. Veil (2002) speaks of the "French exception" (p.86), and Ostner (1995) classifies France as a moderate breadwinner model, i.e. a kind of mixed model, using three indicators, namely the number of working mothers, the extent of independent or derived female social security, and the degree and nature of public childcare (p.10). By contrast, Germany is clearly ranked by Ostner, in analogy to Esping-Andersen, into the strong breadwinner model, which prompts women to accept family-related interruptions in employment and derives social security for women via their partners (Ostner 1995, p.10). Hence, women in Germany are regarded as mothers in terms of the welfare state, whereas women in France are regarded both as mothers and as working members of the family. In neither country are

[2] For an additional overview see also Salles *et al.* 2010.

women treated as individuals with safeguards to their own livelihoods, however, as they are in the social democratic regime type (Ostner 1995, p.10).

It should be mentioned that the welfare state shapes the lives of people in other respects too. In this context the role of labour market regulations should be looked at. In France there are minimum wages (SMIC) – in contrast to Germany where women, especially mothers who are re-entering the labour market, often work part time and in so-called 'mini-jobs'. Mini-jobs are part of the low-wage economy and provide no independent social security, which can make it difficult for women to enter the mainstream labour market. This often prevents mothers from re-entering the labour market at all, and if they have no choice they often get stuck in the low-wage sector. "The mini-job sector promoted by government... is proving to be a 'trap' for women in terms of their career development" (Expert Commission for the preparation of the German Federal Government's First Report on Gender Equality 2011, p.7). There are other aspects such as gender quotas in public domains and supervisory boards, which show that gender equality is seen as cross-sectional task in French policy. In Germany gender equality is more closely related to family policy and of minor importance in labour market policy or in social policy, and still largely based on traditional role models (Luci 2011).

2.2 Family policy

What applies to the welfare state can equally be applied to family policy. French family policy is orientated in line with the ideal of the dual-earner family (Veil 2003; Reuter 2002, 2003b). Therefore, one of the most important measures to prevent family poverty in France is supporting dual-earner families where both partners work full time, whereas German family policy mainly provides cash support in this respect. This is also reflected in other measures, which shall be mentioned briefly.

We concentrate on four classical instruments of family policy: child benefits, parental leave benefits, financial support for childcare and fiscal advantages. In France families receive child benefit independent of income (*allocations familiales*) if they have at least two dependent children. By contrast, in Germany child allowance (*Kindergeld*) is higher and starts with the first child. Parental leave in France is also dependent on the parity of the child[3] as well as on previous employment activity; again, payment is independent of income (*complément du libre choix d'activité*). In Germany, on the other hand, parental leave is the same length for each child, i.e. three years maximum. As for cash benefits, they were paid for 24 months (*Erziehungsgeld*) until 2006,

[3] For the first child it is six months, for the second three years.

but this changed in 2007. Leave is currently paid for 12 months, with a substitution of 67 per cent of the net income before birth[4], with an additional two months granted if the other partner takes them (*Elterngeld*). The rest of the three years of parental leave is not paid. It is now considered an instrument to encourage the involvement of fathers in the raising of their children, which does not exist in France (Luci 2011). In both countries families get a certain amount of financial support for childcare when both parents work.[5] A fourth instrument is fiscal advantages. In France, tax advantages are calculated based on the number of children (*quotient familial*). This means that a mother's additional wage does not affect the tax benefit for the main earner too much, and is therefore unlikely to discourage women from being employed again. A different situation exists in Germany, where the tax system clearly favours single-earner constellations – with couples without children having the greatest advantages (*Ehegattensplitting*); the result is that women are reluctant to re-enter the labour market as this does not necessarily improve the financial situation of the family. In summarising the different measures, we can conclude that financial benefits are not as generous in France as in Germany. There are different tax incentives to re-enter the labour market and we find different career prospects for returning women, which leads to an earlier and more frequent return of French women to the labour market, especially after the birth of the first child.

Another factor that facilitates return to the labour market for French women is external childcare infrastructure. The corresponding bundle of measures covers a relatively large range of care services for children of all age groups, including a comprehensive range of all-day schools. At the same time, however, the possibility to care for small children on one's own also exists, with financial support from the state and a job guarantee up to three years after birth. This opens up the option for the mother to leave work to take care of small children and the possibility to continue in employment with small children, as the woman always contributes to the family income to some degree (Letablier 2007). Only *mothers* are mentioned here, as the primary caregiving responsibility of women for children remains as undisputed in France as in Germany (see for instance Salles 2009; Letablier 2007; Fagnani 2006). In the end, these arrangements in social policy do not lead to equality of men and women but, to put it polemically, constitute "a kind of contract between the state and mothers, taking the weight off fathers' shoulders" (BMFSFJ 2006; author's own translation).

[4] The range varies from a minimum of €300 for women who were not employed to a maximum of €1800.

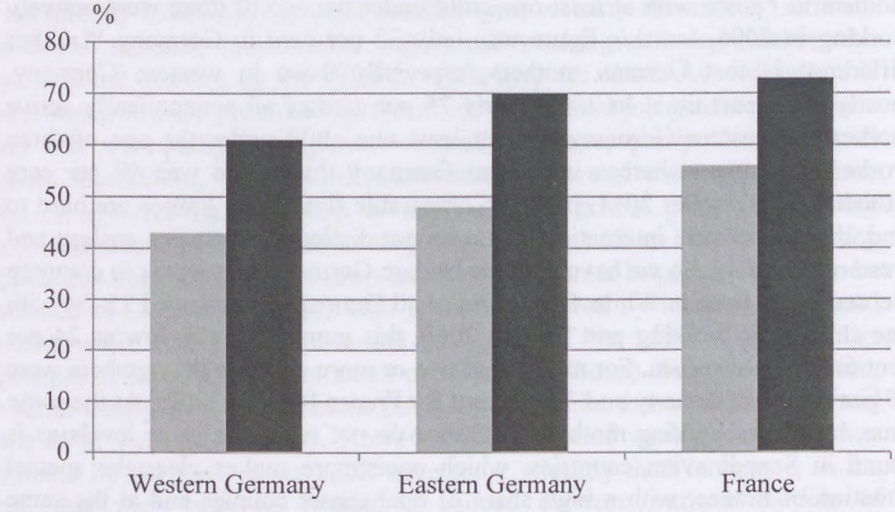
[5] There are special regulations for non-active single parents and couples with one earner, which we will not describe in detail here.

As already indicated, the ideal pursued until recently in western Germany was that of the male breadwinner, with a non-working wife and mother who stays at home to bring up the children while they are small. Accordingly, this model was primarily promoted by the above-mentioned job guarantee of three years and an equally long period of parental leave, partly with financial support. In addition, very limited possibilities for care of children under three years of age and the restriction of many nursery school places to half-day provision made it difficult to offer alternatives in most cases. The family policy impetus has changed in recent years and mothers' career breaks are going to be shortened in Germany as well. This is to be achieved by increasing parental benefits while limiting them to the first year of the child's life, and by expansion of care facilities for small children (see above). Since reunification, the same family policy regulations have applied in the former GDR in formal terms as in western Germany. However, the model of working mothers was promoted by the state in the GDR even more strongly than in France, in the sense that there was no option to choose between various models of reconciliation. As an inheritance from this era, childcare infrastructure in eastern Germany is better than in western Germany (see for instance Kreyenfeld and Geisler 2006). To sum up, France and Germany differ in terms of the family policy's basic perceptions of motherhood, which favours working mothers in France and non-working mothers in Germany, childcare being a matter for the state in France, while it is a private matter in Germany (Letablier and Jönsson 2005). This active role of the state in France is not only accepted but actually supported by French people, who evaluate family policy less by the amount of financial support and more by the possibilities available to reconcile work and family life (Fagnani 2001).

The differences are revealed clearly in the number of mothers in employment. While the female employment rate of 66 per cent in Germany in 2010 was higher than in France at 60 per cent (Eurostat 2011; age 15–64), we find quite different numbers if we look only at mothers. Especially in comparison to western Germany, French women work much more frequently when they have young children (see Fig. I). As parental leave is sometimes counted as employment, it also makes sense to compare the share of actively working mothers.[6] According to OEDC figures (2007b), 47 per cent of all

[6] Definition of "in active gainful employment": "Those on temporary leave in the week under report are included among those in gainful employment according to the concept of the International Labour Organisation (ILO), but not among those 'active' in gainful employment observed here. Those on temporary leave include all persons in gainful employment who did not work in the week under report (including because of maternity leave, parental leave, illness, spa, (special) leave, old-age part-time work, work release, strike, poor weather or short-time working) and were away from their workplaces for less than three months, for instance because of maternity protection" (German Federal Statistical Office 2010).

mothers in France with at least one child under the age of three were actively working in 2006, but this figure was only 32 per cent in Germany. Another difference is that German mothers, especially those in western Germany, mostly work part time. In 2009 nearly 75 per cent of all economically active mothers in western Germany with at least one child under the age of three worked part time, whereas in eastern Germany this figure was 49 per cent (Rübenach and Keller 2011, p.321). Comparable figures for France are hard to find, mainly because international data do not distinguish between eastern and western Germany. So we have to come back to Germany as a whole to compare Germany and France. While 45 per cent of all German women aged 25–54 with one child were working part time in 2000, this number was as low as 24 per cent for French women. For mothers of two or more children the numbers were 60 per cent for Germany and 32 per cent for France (OECD 2002). At the same time, however, working mothers in France do not reach the same levels as is found in Scandinavian countries, which once more makes clear the special situation of France, with a high share of dual-earner couples and at the same time a relatively large share of traditional housewife/male-breadwinner relationships (Reuter 2003a; Hornung 2008, p.37). Finally, these data reveal once again the major differences within Germany, i.e. that mothers' employment rates in eastern Germany are much higher than those in western Germany. This divergent situation is accordingly mirrored in the take-up of formal and informal childcare. Whilst in 2006 roughly one-half of all children under the age of two in France were exclusively cared for by their parents, this figure was 62 per cent in Germany (Plantenga and Remery 2009), and major East-West differences are observed here as well: whereas approximately 60 per cent of all children under the age of three were taken care of by their parents in western Germany in 2005, this was only approximately 30 per cent in eastern Germany (Ette and Ruckdeschel 2007, p.64).



Source: Statistisches Bundesamt (2008); OECD (2007); author's own presentation.
Note: Definition of working mothers: dependent or independent employment within the week under report, regardless of extent.

Figure I
Share of working mothers, by age of the youngest child in eastern and western Germany and France 2007

2.3 Cultural models

The different models upon which family policies are based are also reflected in societal attitudes regarding motherhood and gainful employment. The problem of reconciliation exists in France at the practical[7] but not at the normative level, as there is simply no debate in France as to whether or not a mother should work (Hornung 2008, p.43). The roles of mother and worker are at least equally strongly emphasised in France (Hornung 2008, p.46); indeed, research suggests that many women allot a higher status to their professional role than to their being a mother (Fagnani 1992). Gainful employment and family are therefore not regarded as mutually exclusive, something which Schultheis (1998) regarded as being caused by the fact that gainful employment is not "highly stylised and idealised to become a predominant norm in the hierarchy of values, but is lived out in peaceful – albeit seemingly paradoxical

[7] There are still too few *crèche* places, and these are unevenly spread in regional and social terms (see for instance Salles 2009; Blanpain 2009; Fagnani 2006).

– co-existence with the allegedly irreconcilable but nonetheless much-appreciated values of motherhood and a family career" (p.215, author's own translation). In addition, it is widely believed in France that society has a collective responsibility for children, and that one goal of the childcare system is to provide equal chances for all children to develop and thrive – something that cannot be achieved by the parents alone.

A different situation is seen in western Germany, where childcare is seen mainly as the mother's task (Letablier and Jönsson 2005, p.49), and external childcare is even perceived as being possibly damaging to the development of the child (Fagnani 2001). German parents tend to be sceptical about external childcare. Therefore motherhood and gainful employment were long considered to be incompatible. Mantl (2006) speaks of the "housewife mother" who foregoes gainful employment of her own for the benefit of her child, since the mother used to be (and often still is) regarded as inalienable in terms of the well-being of the child. Working women are therefore frequently put under moral pressure because of alleged negative consequences of their gainful employment for family and children (Schäfgen and Spellerberg 1998, p.75). Herwartz-Emden (1995) speaks of the mother being required to forfeit a life of her own, above all during the first years of the child's life, something that is morally excessive (33). Dienel (2003) also finds a strong model of sacrifice of one's own interests among German mothers. The consequence is that women who are highly career-oriented should be concerned not about living up to society's – and frequently also their own – expectations with regard to traditional perceptions of motherhood. The birth of the first child is therefore frequently understood as a final biographical decision against a career and full professional commitment (Dienel 2003, p.122). Indeed, the "transition to the maternal role is one that poses an alternative to a career, a 180 degree turn away from the way in which life has previously been lived" (Krüger 2006, p.205, author's own translation). Childlessness is therefore regarded as a way out of this dilemma (Onnen-Isemann 2003; 2007, p.168): there is (and has long been) only one decision, namely child or career (Mantl 2006).

The situation is different in eastern Germany, where in the former GDR there was also only one option, but here it was 'child *and* career', which was in line with the official model of the dual-earner marriage provided with state childcare, and was implemented in practice with virtually no alternative (Pfau-Effinger 2005, p.5). Hence, this 'reconciliation model' took on absolute cultural dominance, and alternative models were culturally marginalised (Pfau-Effinger 2005, p.5). Added to this was a positive practical experience of the model, which ultimately led to widespread appreciation of this reconciliation strategy among the populace, and to a broad acceptance of working mothers (Pfau-Effinger and Geissler 2002), something which is still reflected in the attitudes of eastern Germans today. Despite the narrowing gap in the family policy

context, the differences in the models of combining motherhood and gainful employment in both parts of the country largely remain (Kreyenfeld and Geissler 2006). For this reason, it still appears to be appropriate to analyse the two parts of the country separately 20 years after reunification.

The focus of the statements to date has been on women and mothers and their problems with reconciliation of family and work, which indeed constitutes a largely 'female' field of problems, and is accordingly also a focus of research. Nonetheless, the reconciliation models and portrayals of women always imply a certain perception of men and fathers. It is undisputed in the typology of welfare states that in conservative welfare states, i.e. ultimately both Germany and France, men take on the role of the breadwinner. Regardless of the employment status of the woman, it is presumed that the man works. One may observe a change of attitude on the part of fathers towards more gender-balanced roles and the desire to take a more active role as a father, and this is also expressed in their greater involvement in childcare. However, the traditional role models prove to be relatively stable in practice in all other areas, such as housework (see Hofäcker 2006, p.134). Rost and Oberndorfer (2002, p.14) refer to this phenomenon – in the case of Germany – as a "verbal openness coupled with a widespread inflexibility of behaviour", a finding which Hofäcker (2006) extends to Europe as a whole. Here, the change has not been completely implemented at attitudinal level either; Hofäcker (2006) quotes studies from the late 1990s according to which one-fifth of German fathers had never considered taking parental leave (Vaskovics and Rost 1999, p.64), and almost two-thirds of French men thought that the woman should take maternity leave as a matter of principle (Fagnani 1999, p.74).

The finding of a gradual change in the traditional perception of men at attitudinal level – but of widespread 'resistance' at the level of action – applies initially to both parts of Germany and also to France. The difference, however, lies in the breadwinning responsibility that, with a female partner who also works, no longer places the burden on the man alone, whilst with the model of the non-working 'wife and mother', the man's gainful employment is decisive for the long-term security of the family (Tölke 2005, p.115). A working partner can therefore be perceived as relieving the burden, something which favours realising desired fertility, but may also amplify insecurity as to the perceived role of the father, possibly because of a lack of suitable role models within society (Tölke 2005, p.101). In this respect, the different models of the role of the woman and mother in the three regions affect both women and men equally, albeit only indirectly in some cases.

3 HYPOTHESES

Because of the life-long bond which it establishes, opting for a(nother) child is so full of consequences that in many cases an individual cost-benefit analysis may be assumed to take place.[8] Here, structural and cultural contexts, which may be both favourable and restrictive, help to decide on the anticipated costs of desired fertility, and hence on desired fertility itself. Only the reconciliation costs will be studied below, and these become particularly apparent if parenthood is not to be devoted to family activities, which applies above all if both parents wish to remain in work, given that third-party childcare then becomes unavoidable. This problem of reconciliation must be solved both at the practical and at the normative level, something which can be achieved with various arrangements differing in price (Huinink 2002, p.55). Women continue to bear the main burden of reconciliation, certainly as regards practical arrangements, but also in terms of the normative dimension, which is why the evaluations in this paper are restricted to them. Of course, men are also concerned where, in cases of traditional role sharing, they bear a greater responsibility for maintaining the family than if there is an egalitarian division of tasks, which is again equally moderated by structural contexts. They do not face the normative reconciliation problem, however, in the same way as women, although the demands placed on the role of the father have also increased. As an indicator for structural factors we chose the employment situation of the couple, which is seen as an outcome of the range of available public childcare and is one decisive cost factor in the reconciliation of work and family. This leads to the first hypothesis regarding the influence of structural contexts on women's desired fertility:

H1 *The relatively well-equipped childcare infrastructure in France and eastern Germany leads to a situation in which dual-earner constellations do not exert a negative influence on women's desired fertility. By contrast, such an infrastructure is largely missing in western Germany, so that the reconciliation costs there lead to a negative effect.*

As mentioned above, the problem of reconciliation also exists at the normative level. In societies where the spheres of household and children are mainly allocated to the woman, there is little acceptance of an externalisation of services attributed to the family sphere, and justifying such a move requires considerable effort – which can also be counted as reconciliation costs. Since both western Germany, and to a lesser degree France (see above), may be considered examples of the conservative welfare state type and therefore support the model of non-working housewives and mothers in institutional

[8] There is also the possibility of an unplanned birth.

terms, Hypothesis 2 regarding the influence of cultural contexts reads as follows:

H2 *A positive attitude towards being a housewife has a positive effect on women's desired fertility.*

As has already been stated, another family model co-exists in France, i.e. that of the dual-earner family, which persists in eastern Germany despite political upheaval. A positive fundamental stance towards working mothers reduces the normative costs of parenthood for women, since it grants them greater freedom of choice with regard to their life planning. This leads to Hypothesis 3:

H3 *The more positive evaluation of working mothers in France and eastern Germany reduces the reconciliation costs at the normative level, and therefore has a positive influence on desired fertility in contrast to western Germany where the influence is correspondingly negative.*

4 DATA AND OPERATIONALISATION

4.1 Data

The empirical evaluations are based on data from the German and French Generations and Gender Surveys (GGS), which were both implemented in 2005 in the context of the international Generations and Gender Programme.[9] The German GGS comprises a representative sample of 10,017 German-speaking persons living in private households aged between 18 and 79 (see Ruckdeschel *et al.* 2006). In France, 10,056 representative individuals, also aged 18–79, were interviewed (see Régnier-Loilier 2006). For both countries we use version 3.0, a revised and cleaned sample of the original data by the Netherlands Interdisciplinary Demographic Institute (NIDI). The GGS is regarded as a successor to the Family and Fertility Surveys (FFS), and contains biographical questions on developments in both partnership and fertility, as well as questions concerning attitude (for example, concerning gender roles). Furthermore, comprehensive information is collected on inter-generational relationships. The GGS is structured as a panel, i.e. second and third waves are collected at three-year intervals. This allows prospective questions to be posed, for instance about desired fertility, which can be examined with both of the other waves.

[9] The German GGS was carried out by the Bundesinstitut für Bevölkerungsforschung (BiB); the French GGS was implemented by the Institut national d'études démographiques (INED).

4.2 The sample

This paper studies the influence of cultural and structural contexts on desired fertility in Germany and France. Desired fertility has been selected instead of a measure of actual fertility outcomes because the first wave of the GGS is a cross-sectional survey, which is why it is not possible to link the number of children already born with individual attitudes, as might be possible with panel data. Attitudes and values vary over time and therefore cannot necessarily be linked causally with a past decision to have a child. We also restrict the future perspective by looking at (further) desired fertility in the next three years. The assumption being that this timeframe is more concrete and realistic than desire in an indefinite future (van Peer 2002). The possible answers "yes, certainly" and "yes, probably" have been combined to "yes", and the responses "certainly not" and "probably not" have been combined to "no". In order to obtain precisely defined groups for the analysis, only those individuals who clearly expressed their desired fertility have been considered; the group of undecided persons has been excluded, being too small to analyse separately (see Table 1). The small number of undecided may be explained by the restricted time horizon of reproductive intentions in the next three years, which constitutes a foreseeable time span in which most individuals are able to make concrete plans.

The studied population has further been restricted to those individuals for whom the question of desired fertility is relevant, which is why lesbian and pregnant women have been excluded from the analyses. We studied both the desire of childless women to have a first child and the desire of mothers with one child to have a second. Different age limits have been selected for these two groups because the empirically calculated probability of desired fertility with childless women reduces rapidly from the age of 35 and is virtually zero from 40 onwards (Pötzsch and Sommer 2009, p.381). Because of this very small number of cases, the 40+ age group has been ruled out of the analyses of childless persons, whilst they have been retained for mothers who already have one child. Furthermore, only respondents with a partner have been considered, since desired fertility does not usually take on concrete shape until a partnership is formed (see for instance Dorbritz and Ruckdeschel 2007, p.67; Helfferich *et al.* 2004, p.26), and the analyses should be focused on the influence of contexts and not on general obstacles such as lacking a partner. Here too, distinction has been made between childless persons and mothers. Childless women in non-residential partnership have been included. However, among mothers, only women who lived together with a partner have been included: parents living apart are so rare in both countries that no generalisable conclusions can be drawn, and at the same time their inclusion might distort the results.

These restrictions yield a final sample of 352 childless respondents for Germany (273 west, 79 east) and 565 childless respondents for France. For mothers with one child, 361 respondents emerge for Germany (265 western, 96 eastern) and 278 respondents for France, their desire for an additional child fluctuating between 18 per cent among eastern German women with one child and 56 per cent with French women with one child (see Table 1). These considerable differences are a result of there being fewer one-child families in France, in favour of families with more children, the differences becoming particularly pronounced when it comes to families with at least three children.[10] Accordingly, mothers with one child in France like to have at least a second child much more frequently.

Table 1
Final sample size by groups and countries

	Desired fertility in the next three years	Western Germany		Eastern Germany		France	
Childless	Yes	111	41%	36	46%	308	55%
	No	162	59%	43	54%	257	45%
	Don't know, no answer	29	–	10	–	19	–
Parents with one child	Yes	91	34%	17	18%	157	56%
	No	174	66%	79	82%	121	44%
	Don't know, no answer	30	–	5	–	7	–

Source: GGS 2005, Germany and France, author's own calculations.

4.3 Control variables

In order to verify the dependence of desired fertility on further influencing sociodemographic factors, additional characteristics have been included in the analysis both at individual level (age and education) and at the couple level (institutionalisation of the relationship) (see Appendix for descriptive statistics on the variables). Age correlates closely with the realisation of desired fertility, i.e. as age increases the actual number of children also increases and the number of additionally desired ones falls. As we concentrate on fertility intentions for the next three years, the effect of age is not linear but rather a

[10] The share of households with one child under the age of 15 among all households with children was 28 per cent in Germany and 22 per cent in France in 2007; the share of households with three or more children, by contrast, was 24 per cent in Germany and 32 per cent in France (OECD 2010).

reverse 'U shape', because younger people want to wait until they have finished their education and have entered the labour market, while at the same time age imposes a biological ceiling on desired fertility. This combines with individual ideas concerning the ideal age for family formation, i.e. even if all the prerequisites are met to achieve desired fertility but a person feels too old, the desire is no longer realised (Helfferich *et al.* 2004: 28; Rost 2003: 19). We therefore include age as a categorical variable. In both samples – for childless women and for mothers – one recognises some characteristic differences in the age distribution between the regions studied. For instance, the share of childless women over 35 is lower in France than in Germany. Education is interpreted in the sense of the household economic approach by Gary S. Becker (1993), i.e. higher education is linked to greater opportunity costs for women if motherhood entails leaving work for a long time. Operationalising the educational variables on the basis of the International Standard Classification of Education (ISCED) led to major problems of comparability, since university qualifications are more common in France than in Germany.[11] Especially in the younger age groups, the share of university graduates in France among childless women is about 50 per cent, and among mothers it still exceeds 40 per cent – which is two to three times more than both German regions. Evaluation has been carried out for separate datasets, though the analyses nonetheless include education (on a bivariate basis), with the characteristics high (university degree) and low (up to and including secondary schooling) after models with three characteristics did not lead to any major changes in the results. Finally, the degree of institutionalisation of a partnership also correlates with desired fertility, i.e. marriage and the probability of the desire for a (further) child are strongly correlated (Schoen *et al.* 1999: 795). At the individual level, marriage is in some cases still seen as confirming the stability of a relationship, which in turn is considered a prerequisite for a decision as far-reaching as the achievement of desired fertility. At the same time, there are also practical interests in marrying, since, depending on the legal framework, a woman who intends to stop working (fully or parially) for taking up childcare still has the best financial security when married. Here as well, the three regions show characteristic differences between the samples: the link between parenthood and marriage is still much closer in western Germany than in the former GDR (including all of Berlin) and also closer than in France. Fifty-seven per cent of all children in eastern Germany were born out of wedlock in 2007, this figure being 52 per cent in France (Eurostat 2010), but only 26 per cent in western Germany (Statistisches Bundesamt 2009). In the samples, correspondingly, many more childless women in western Germany were

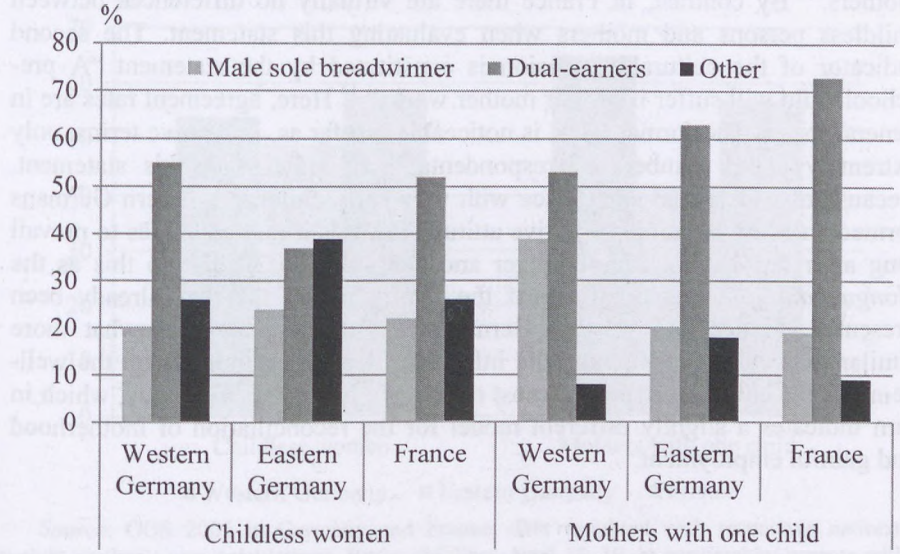
[11] For instance, 42 per cent of French 30 to 34 year-olds but only 27 per cent of Germans in this group had a tertiary qualification in 2007 (ISCED 5-6) (EACEA 2009, p.245).

already married than in the other two regions, and this difference was even more pronounced among mothers with one child. Finally, for mothers with one child, the age of that child is a very important factor when it comes to fertility decisions.

5 RESULTS

5.1 Descriptive results

The influence of structural contexts is measured indirectly, via its outcome in the extent of gainful employment at the couple level (see Fig. II). As would be expected, among childless persons the differences are not particularly pronounced. In roughly half these couples in western Germany and France both partners are in at least part-time employment. The share of "others", which includes the unemployed and those in training and not working, is around 26 per cent for western Germany and France, which is also due to the young age structure of the sample, i.e. a relatively large number of respondents and/or their partners are still in training. What is more, this category has unemployment rates of six per cent of all respondents in western Germany, eight per cent in France and as much as 15 per cent in eastern Germany, this explaining why the proportion of "others" is extremely high in eastern Germany. Major differences do not emerge until we look at mothers with one child. The prevalence of a more traditional perception of motherhood in western Germany leads to a much larger share of male sole breadwinners here than in eastern Germany or in France. Nonetheless, in all three regions dual-earner couples are the majority. In the former GDR, the "other" constellation again has a relatively large share of women (18 per cent) in which the respondent is unemployed.



Source: GGS 2005 in Germany and France; data weighted with the respective national weight; author's own calculations. Basis: childless, aged 18–39, in partnership; parents with one child, aged 18–45, living with partner.

Notes: Definition of Male sole breadwinner – man in full or part-time work, woman not in work, including in training and unemployed; Dual earners – both at least working part time; Other – all other combinations and possibilities, for instance only woman working, both in training, etc.

Figure II

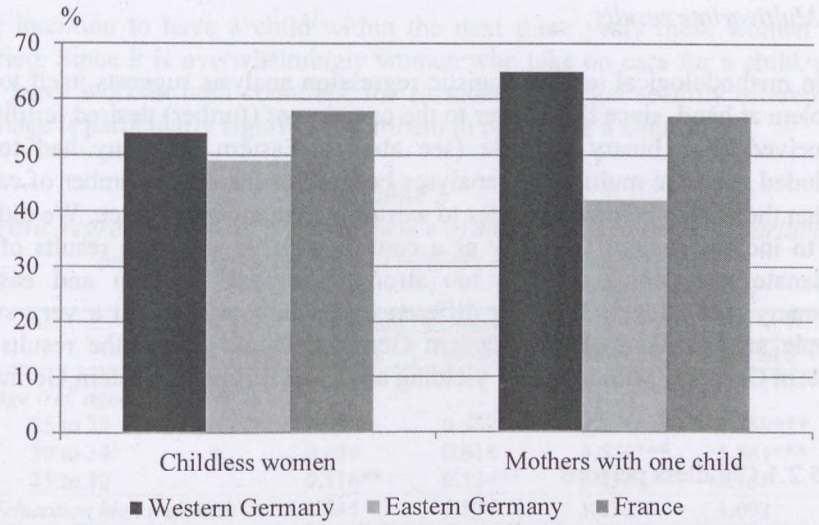
Childless couples and parents with one child by labour force participation of both partners

The cultural dimension – the sense of the attitude towards mothers – is shown via two variables. First, the general appreciation of non-working women and mothers is recorded by the statement "Looking after the household and children is just as fulfilling as paid work". The agreement rates fluctuate between 42–65 per cent. They are lowest among childless persons and among mothers with one child in eastern Germany, where fewer than half of respondents agree. In France and western Germany, by contrast, agreement rates are much higher, at about 60 per cent in both groups, with the exception of western German mothers of whom nearly two-thirds agreed. Western Germany also showed larger differences between childless persons and

mothers.[12] By contrast, in France there are virtually no differences between childless persons and mothers when evaluating this statement. The second indicator of the cultural dimension is constituted by the statement "A pre-school child will suffer if his/her mother works".[13] Here, agreement rates are in general lower. The former GDR is noticeable insofar as, in relative terms, only extremely small numbers of respondents there agree with this statement. Because of widespread experience with very early childcare, eastern Germans formed an overwhelmingly positive attitude towards it that continues to prevail long after unification. Pfau-Effinger and Geissler (2002) refer to this as the "*longue durée*" (long duration) of the family model that has already been presented. France and western Germany, by contrast, are somewhat more similar to each other, although the influence of working mothers on the well-being of the child is considered most negatively in western Germany, which in turn indicates a slightly different model for the reconciliation of motherhood and gainful employment.

[12] It is difficult to validate the results using data of the ISSP (i.e. International Social Survey Programme – www.issp.org), since the questions were asked differently. In the ISSP 2002, the statement targeted unpaid work only: "Being a housewife is just as fulfilling as working for money", the aspect of motherhood thus being left out altogether, so that agreement rates are bound to be much lower.

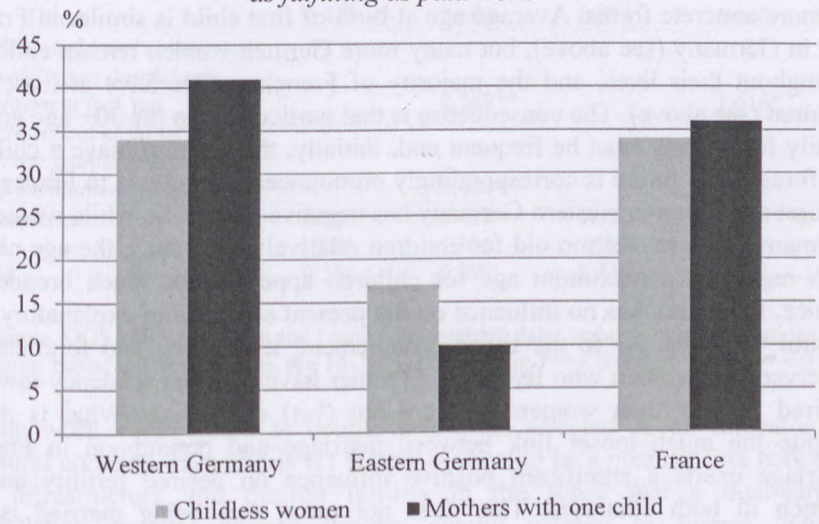
[13] Validation is difficult in this case too. In the ISSP 2002 the question was 'weaker': "A child who does not yet go to school will probably suffer if his/her mother works". The agreement rates in western Germany and France are similar to those in the GGS, while they are higher in eastern Germany. A different response scale was used in the Eurobarometer 2006; there is no "neither agree–nor disagree" category, so that here too the results are not comparable.



Source: GGS 2005 in Germany and France; data weighted with respective national weight; author's own calculations. Basis: childless, aged 18–39, in partnership; parents with one child, aged 18–45, living with partner; question text of the German questionnaire.

Figure III

Agreement with the statement "Looking after the household and children is just as fulfilling as paid work"



Source: See Figure 3 above.

Figure IV

Agreement with the statement "A pre-school child will suffer if his/her mother works"

5.2 Multivariate results

In methodological terms a logistic regression analysis suggests itself to the problem at hand, since the answer to the question of (further) desired fertility is conceived as a binary variable (see above). Eastern Germany had to be excluded from the multivariate analyses because of the small number of cases, so that the results below only refer to western Germany and France. We did not opt to include eastern Germany as a control variable since the results of the explanatory variables differed too strongly between western and eastern Germany (see above). This big difference in combination with a very small sample means that including eastern Germany would distort the results for western Germany without really yielding any valid results for eastern Germany.

5.2.1 Childless persons

Before investigating verification of the hypothesis in greater detail, the influence exerted by the control variables is discussed. Particularly in France, age is a relevant influential factor for desired fertility. In comparison to the <25 reference group, chances of desired fertility within three years for women in the next two older age groups are significantly higher (see Table 2). This does not mean that desired fertility in general increases, but that plans to achieve it take on more concrete forms. Average age at birth of first child is similar in France and in Germany (see above), but many more German women remain childless throughout their lives, and the majority of French people have at least two children (see above). The consequence is that particularly in the 30+ age group, family formations must be frequent and, initially, the desire to have a child in the foreseeable future is correspondingly pronounced. In contrast to France, the highest age group in western Germany has negative results. So while women in Germany seem to feel too old for children relatively early on[14], the age norms with regard to a maximum age for children appear to be much broader in France. Education has no influence on the present selection of explanatory and control variables. As to the living arrangement, it can first and foremost be observed that women who live with a partner have a higher tendency towards desired fertility than women who are not (yet) cohabiting. What is more, despite the much looser link between marriage and parenthood in France, marriage exerts a significant positive influence on desired fertility among women in both countries. This does not mean that being married is the explanation for the fertility desire but that the opposite is true, i.e. because of

[14] Another model, not presented here, shows that the 35+ age group is particularly relevant.

their intention to have a child within the next three years these women get married. Since it is overwhelmingly women who take on care for a child, and may leave work in both countries, the financial and legal security offered by marriage is particularly significant for them in opting for a child.

Table 2

Logistic regression model of the influence of structural and cultural variables on the desired fertility of childless women, odds ratios

	Western Germany		France	
	Model 1	Model 2	Model 1	Model 2
Age (ref. aged under 24)				
25 to 29	0.952	0.950	3.221***	3.269***
30 to 34	0.639	0.614	5.576***	5.561***
35 to 40	0.116**	0.124**	2.052	2.158^{+}
Education high (ref. low)	1.645	1.504	1.072	1.092
Living arrangement (ref. Non cohabiting partner)				
Non-marital union	4.007***	4.855***	2.351***	2.322***
Marriage	8.179***	9.419***	6.259***	6.215***
Earning combination (ref. male breadwinner)				
Dual-earner	0.705	0.656	1.869*	1.859*
Other	0.619	0.690	0.633	0.640
Household and children as fulfilling as gainful employment (ref. no)		2.288**		1.616*
Pre-school child suffers under gainful employment of the mother (ref. no)		0.484*		1.016
Constant	0.213***	0.432	0.330***	0.246***
N	204	204	552	552
R^2	0.256	0.299	0.344	0.354

Source: GGS 2005, Germany and France; unweighted data; author's own calculations.
Notes: Basis: childless women, age 18–39, in partnership; *** < 0.000; ** < 0.01; * < 0.05.

The work combination at couple level was selected as an indicator of structural contexts. Hypothesis H1 supposes there to be a positive link between care infrastructure and desired fertility in the sense that a dual-earner constellation favours desired fertility among women in France, whilst preventing it in western Germany. The results for childless persons only weakly support this hypothesis, given that there is no such effect for Germany, and only at a slight level of significance in France. If one adds the attitude variables of the cultural dimension, the influence of the control variables and of gainful

employment remain. Both for German and French women a positive attitude towards housework and bringing up children have a significant positive effect on desired fertility, which was also phrased as an expectation in H2. Among western German women, the conviction that pre-school children will suffer if their mothers are in gainful employment exerts an additional negative influence on desired fertility, as is presumed in H3. We checked for multicollinearity in this context with the two attitude variables, and they proved to be uncorrelated in France and only weakly correlated in western Germany (Pearson's coeff. 0.13**). This means the two topics of being a housewife and the well-being of a pre-school child are indeed seen as relatively independent by the respondents.

5.2.2 Mothers with one child

Before carrying out the analysis itself we checked for multicollinearity again. Once more we found nothing for France. For western Germany it was still at an acceptable level for the attitude variables (Pearson's coeff. 0.24***), but it was quite high for the correlation between age of the first child and earning combination (using chi^2 test), which proved to be relevant for the model. A common solution to multicollinearity is to remove one of the correlated variables. However, it is not possible to omit any of the variables if we wish to examine the hypotheses of this paper. We therefore show the results for Germany with employment arrangement separately first, and then together with age of the first child since the sample is too small for an interaction term. Creating a new variable out of the two poses the problem of multiplying the baselines for the reference category[15] for which the sample is again too small.

For both countries we find mainly an age effect. The older the woman, the lower the chances of wanting a second child in the next three years. Strong negative effects are shown in the age group from 35+ among French and German women (see Table 3). This applies to the age of the first child as well, i.e. the older the first child, the lower the chance of positive fertility intentions for the next three years. Indeed, both variables are not uncorrelated but the bias is negligible and results remain stable if either is omitted. In Germany a high level of education leads to a significant increase in the probability of further desired fertility within the next three years, which Huinink (1995, 2002) attributes to the existence of both a family-orientated and a family-distant group within the upper educational group. Childlessness increases with

[15] If the two items had three categories each, we would have eight baselines and one reference category instead of the previous four (two for each variable). Because of the small sample size this would distort the model severely. An aggregation of categories would to some extent be arbitrary and results would depend strongly on the choice of the new categories.

education level, but the propensity to have a second child is particularly pronounced in more highly educated groups once family formation has taken place (Huinink 1995, p.353). We do not find any such effect for France. With regard to the influence of gainful employment at couple level, it was anticipated in H1 that among German women gainful employment of both partners, in comparison to the male sole breadwinner model, would exert a significant negative influence on desired fertility. However, and as mentioned above, this effect is strongly biased with the age of the first child. When including age of first child in the model, the significance for the employment effect disappears. In such a case of multicollinearity it is difficult to determine the extent to which each variable has an influence on the dependent variable. What we can say is that the age of the child in combination with the employment situation seems to be relevant. This means that women with young children who are in a male breadwinner constellation have a higher probability of wanting a second child. We must be careful with our interpretation here not to end in tautologies. It is not because of their employment constellation that women wanted a second child but that they most probably anticipated reconciliation problems which is why they are in this constellation. The ability of the man to feed the family therefore does not become relevant to the decision until after the formation of a family if mothers leave work altogether. As has already been stated, and is also the case in France, the main burden of reconciliation is borne by women and not by men, which explains why the better reconciliation conditions experienced by French women do not show any significant negative effects, but neither do they show any positive ones either, as formulated in H1. The attitude variables do not provide any relevant explanatory contribution for mothers with one child, so all hypotheses in this respect have to be rejected. This corresponds with results of Billari *et al.* (2009), who were able to show that in Bulgaria societal norms above all else influence the transition to parenthood, whilst cost–benefit considerations, i.e. structural contexts, exerted a stronger influence in the transition to the second child.

Table 3
Logistic regression model of the influence of structural and cultural variables on the desired fertility of mothers with one child; odds ratios

	Western Germany			France	
	Model 1a	Model 1b	Model 2	Model 1	Model 2
Age (ref. aged under 30)					
30 to 34	1.026	1.217	1.226	0.767	0.808
35 to 39	0.140***	0.186**	0.189**	0.326	0.349*
40 to 45	0.012***	0.022**	0.023**	0.077***	0.081***
Education high (ref. low)	3.597**	3.419**	3.594**	1.389	1.503
Living arrangement marriage (ref. Non-marital union)	0.792	0.882	0.940	1.157	1.086
Earning combination (ref. male breadwinner)					
Dual earner	0.462*	0.863	0.918	0.768	0.922
Other	0.350	0.527	0.535	0.799	0.889
Age of the first child (ref. 0–3)					
4 to 10		0.211***	0.203***	0.255***	0.225***
11 and older		0.211**	0.210*	0.083***	0.066***
Household as fulfilling as gainful employment (ref. no)			1.436		1.320
Pre-school child suffers under gainful employment of the mother (ref. no)			0.879		1.690
Constant	2.059	2.204	1,663	6.809***	4.348**
N	232	232	232	266	266
R^2	0.454	0.512	0.515	0.481	0.490

Source: GGS 2005, Germany and France; unweighted data; author's own calculations.
Notes: Basis: women with one child, age 18–45, living together with partner; *** < 0.000; ** < 0.01; * < 0.05

5.3 Summary

The influence of cultural and structural contexts on (further) desired fertility of women in Germany and France was tested in a logistic regression model. The hypotheses presumed that structural contexts such as the availability of childcare and, correspondingly, the possibility for mothers to work, would play a role in desired fertility. It was also presumed that cultural differences, above all societal acceptance of working mothers, would also play a role. We

presented hypotheses separately for western and eastern Germany and France. However, because of the case numbers it was only possible to verify the hypotheses for western Germany and France. Furthermore, we only had a few indicators, which can only be seen as proxies for the dimensions to be tested.

The influence exerted by structural contexts was operationalised via its outcome, labour force participation of both partners at couple level. It was presumed here that better childcare infrastructure available for small children coupled with more generous opening times would not extert any negative influence on desired fertility in France. Coversely, it was presumed that the very lack of such infrastructure would exert a negative influence on desired fertility in western Germany. This hypothesis was to apply above all for those concerned, i.e. mothers who already have one child. In fact, the earning situation among mothers had the anticipated effect but only at a small and unstable level of statistical significance, i.e. in western Germany women with one child desire a second child significantly less often if both partners are in work, especially when their child is younger than three. This was evaluated as indicating poor possibilities of reconciling work and family life. By contrast, the same labour force participation model did not exert any significant influence in France. This was interpreted as meaning that French women are relieved of a burden by the structural context, so that the dual-earner constellation does not exert a significant negative effect, but also that male partners do not contribute much and women's burdens are still not reduced enough to allow for a significant positive effect.

At the cultural level, only childless women showed significant effects. The influence of the general appreciation of housework and motherhood was initially examined, which proved significantly positive both among both French and German women. This can be traced to the simple fact that women who appreciate parenthood also want children more. Furthermore, both countries have welfare state contexts which legally and financially support parents to leave work to take care of small children. Hence, it was also possible to confirm the second hypothesis for women.

Finally, the attitude towards working mothers and its influence on desired fertility was tested. The results point in the direction specified by Hypothesis 3, that a critical attitude towards working mothers acts as an obstacle to desired fertility among childless women in western Germany, but that this is no longer the case among women who already have one child. This indicates, as previously stated by Dienel (2003) and Onnen-Isemann (2003, 2007), that the decision to have children for western German women appears to be a fundamental one, i.e. opting for a first child means setting it as an absolute first priority and frequently signifies foregoing continuous gainful employment. With the second child (at the latest), the attitude towards gainful employment

no longer exerts a significant influence because at this point the question of a rapid return to work and its consequences no longer arises.

6 CONCLUSIONS

Questions are often raised as to whether Germany could learn from France about how to shape its family policy. The similar regime type makes this idea all the more desirable, given that it is much simpler to change individual welfare state factors rather than the entire system. In fact, an attempt has been made in German family policy in recent years towards quick re-integration of mothers into the labour market. Since 2007, parental benefit has only been paid for one year (maximum of 14 months) and at the same time the daycare infrastructure for small children has been expanded.

However, the differences in the structural contexts are also an expression of differences in cultural development. For instance, there are two distinct and contradictory models in France at the normative level, namely the working mother and the child-caring housewife, both of which are equally accepted by society. The consequence is that women do not have to justify their decision towards one or the other model, and children are thus a natural option in life, regardless of the respective labour force participation of both partners. In Germany, by contrast, the model of the good mother who gives up work for her children to completely devote herself to their welfare is still dominant at the cultural level. This model was supported at a structural level for a long period of time, and it is only in recent years that the corresponding frameworks have slowly started to change (Mantl 2006). Hence, the model still has a strong impact on behaviour and women who want children *and* a career face not only practical difficulties but also challenges at the normative level. The option of doing both at once is incompatible with the ideal of the good mother, a dilemma which is frequently only solved by postponing desired fertility or through childlessness. It will take time to change attitudes and to make working mothers more broadly accepted. When realigning family policies, the still relatively large share of women and mothers who have a negative attitude towards early external care of children should therefore not be forgotten. German family policy can in fact learn from the French model and reorientate itself: it should facilitate the realisation of desired fertility by women working full time, and increase acceptance of women and mothers who find the meaning of their lives in the family *and* in the home. Since the non-working mother is widely accepted and the working mother is regarded critically, a possible way forward could be to emphasise the positive benefits of external childcare to children, such as creating equal conditions for all children to thrive, rather than focusing the debate on the working mother.

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APPENDIX

Table A.1
Description of the sample, percentages (possible gaps to 100% are missing values)

		Western Germany	Eastern Germany	France
Childless Women				
Age	Aged under 24	42.1	57.0	52.9
	Aged 25 to 29	28.2	25.3	28.1
	Aged 30 to 39	17.2	5.1	12.0
Living arrangement	Living apart together	43.6	44.3	50.8
	Non-marital cohabitation. PACS[16]	33.0	43.0	36.5
	Marriage	23.1	7.6	12.7
Education	Low	60.1	63.3	49.9
	High	22.0	12.7	50.1
N		273	79	565
Women with one child				
Age	Aged under 30	25.3	24.0	30.2
	Aged 30 to 34	24.2	26.0	23.5
	Aged 35 to 39	24.9	27.1	27.7
	Aged 40 to 44	25.7	22.9	18.6
Living arrangement	Non-marital cohabitation. PACS	10.6	26.0	44.9
	Marriage	89.4	74.0	55.1
Education	Low	76.0	74.2	58.6
	High	24.0	25.8	41.4
Age of the first child	Aged 0 to 3	41.9	32.3	51.4
	Aged 4 to 10	28.7	18.8	27.7
	Aged 11 and older	24.5	41.7	17.6
N		265	96	285

Source: GGS 2005. Germany and France; unweighted data; author's own calculations.
Notes: childless women; aged 18–39, in partnership; women with one child. aged 18–45, living with partner.

[16] *Pacte civil de solidarité*, civil partnership with joint estate, joint tax assessment and fiscally favourable inheritance regulations; similar to a registered partnership in Germany.

WITH OR WITHOUT YOU
Partnership Context of First Conceptions and Births in Hungary

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ABSTRACT: *Using notions from the Second Demographic Transition theory and the Pattern of Disadvantage argument, I study how women's risk of a first conception within different union types (single, cohabitation, marriage) is influenced by education in Hungary and whether this influence has changed over time. Additionally, I examine the transition to marriage among women who experienced a non-marital conception. Using the first wave of the Hungarian Generations and Gender Survey from 2004, I conduct discrete time survival analyses and logistic regression. I find a positive educational gradient of marital conceptions, while this gradient is negative for cohabiting conceptions. Moreover, highly educated women are less likely to experience a cohabiting or a single conception than a marital conception compared to their medium educated counterparts. Furthermore, the impact of education on the risk of a single and marital conception changes over time. The positive gradient of education on the risk of a single conception emerged after the transition, while it declined for marital conceptions. No consistent patterns are found for cohabiting conceptions. Additionally, highly educated women and those who experienced a conception while being single are more likely to marry than their lower educated counterparts and those who experienced a cohabiting conception.*

INTRODUCTION

In the last few decades the prevalence of alternative family forms, such as non-marital cohabitation and non-marital childbearing have increased across Europe and in the United States. The increase in the proportion of births out of wedlock was mainly the result of the rising number of cohabitations and cohabiting births in most European countries (Perelli-Harris and Gerber 2011; Perelli-Harris *et al.* 2010; Spéder 2004b), except in the UK where the number of births to single mothers also increased (Kiernan 2004).

There has been much debate about how the increasing share of non-marital births can be explained and which societal groups are experiencing these new forms of family behaviours. On the one hand, the Second Demographic Transi-

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tion (SDT) theory argues that ideational and value changes contribute to changing family behaviours. Thus, liberal, individualistic, and more secularised people are expected to be the forerunners of these family formation behaviours (Lesthaeghe and van de Kaa 1986). On the other hand, using the Pattern of Disadvantage argument, some studies have shown that more disadvantaged groups (i.e. those with low education and fewer resources) are more likely to give birth within cohabitation (Berrington 2001; Perelli-Harris and Gerber 2011; Perelli-Harris *et al.* 2010). If this is the case, the increasing proportion of non-marital births might contribute to the reproduction of inequalities. These contradictory arguments have not been tested in the Hungarian context before.

In Hungary, a societal, political, and economic transition took place in 1990; democracy replaced socialism, market economy was implemented and people's norms and values changed. These changes affected fertility and family formation behaviours (Thornton and Philipov 2009). For example, first births and marriages were increasingly delayed or forgone, and the prevalence of cohabitation and non-marital childbearing increased (Hoem, Kostova, Jasilioniene and Muresan 2009). The rate of extramarital pregnancies remained very low (5–7 per cent) until the 1980s when it started to increase (Pongrácz and Molnár 2003) along with the proportion of cohabitants. Before the 1980s most cohabitation in Hungary was post-marital, but after the mid-1980s never-married cohabitation as well as non-marital childbearing became more common (Carlson and Klinger 1987; Spéder 2005). Between 1998 and 2011 the proportion of out-of-wedlock births rose dramatically from 26.6 per cent to 42.3 per cent. This rate is among the highest in post-socialist countries following Estonia (59.7%), Slovenia (56.8%), Bulgaria (56.1%), and Latvia (44.6%) (Eurostat 2012). Yet, attention has mainly been focussed on describing rather than explaining trends in the partnership context of first births in Hungary. As a result, it is not clear whether non-marital conceptions are more likely to occur among people with high or low socio-economic status in the Hungarian context. Using educational attainment as a proxy for socio-economic status, it is possible to examine which societal groups are more likely to experience these new family forms.

Therefore, this study aims to answer the following research questions: How does education influence women's risk of a first conception within different union types (i.e. single, cohabitation, marriage) in Hungary, and has this influence changed over time? To capture possible changes in partnership status between conception and birth, I focus on first conceptions. Higher order conceptions are less likely in a non-marital union as the union type of unmarried parents usually changes after the first conception. This also implies that if the spouses marry between conception and birth, partnership status at conception might not be of importance *per se*. Therefore, this paper also investigates whether women who experienced a non-marital conception marry between conception and birth.

This study contributes to the literature in several ways. First, most previous studies on Hungary have investigated which educational groups cohabiters belong to (Pongrácz and Spéder 2003; Spéder 2005) or how education is related to the timing of first union formation and first birth (Aassve, Billari and Spéder 2006; Bradatan and Kulcsár 2008; Hoem, Gabrielli, Jasilioniene, Kostova and Matysiak 2010; Hoem et al. 2009). Much less attention has been paid to the relationship between education and partnership status at first conception or birth. An exception is Spéder (2004b), who found that the least educated women are the most likely to have a child in a non-marital union and within cohabitation using logistic regression models. He did not, however, distinguish between first and higher order births and did not compare the risk of a single, cohabiting, and marital birth by education within the same model. The present study aims to contribute to the literature by applying discrete time competing risks models.

Second, previous research has not investigated whether and how the influence of education on the risk of a single, cohabiting, and marital conception has changed over time. For example, Spéder (2004b) restricted the multivariate analyses to births that occurred after the transition in 1990. However, given the vast social, economic, and political changes after the transition, one would expect the extent to which education influences the partnership status of first conception to have also changed over time. Furthermore, as previous studies have indicated, some changes in partnership and family formation behaviours had already started before the transition (Carlson and Klinger 1987; Spéder 2005). Therefore, by examining how the influence of education on the risk of a first conception within different union types has changed over time, the present study fills a gap in the literature on Hungary.

Third, in order to be able to assess changes in partnership status between conception and birth by education, I investigate time to first conception (rather than to first birth as was done by (Spéder 2004b)). This might be essential, as the partnership status of spouses often changes between conception and birth. If this is the case, partnership status at conception may be less important than at birth. Furthermore, there might be educational differences in the decision to marry following a non-marital conception.

To sum up, the present study contributes to the literature by applying discrete time competing risks analyses to examine the risk of a first conception within different union types in Hungary, differentiating between cohabiting and single non-marital conceptions. Furthermore, I examine possible changes over time of the influence of education on the risk of a first conception within different union types. Last, studying first conceptions as opposed to first births allows the examination of changes in partnership status between conception and birth by education.

THEORY AND HYPOTHESES

Second Demographic Transition versus Pattern of Disadvantage

From the 1960s, major demographic changes took place in western Europe: the quantum of fertility was declining, marriage and childbearing were being postponed, new living arrangements were being adopted and the proportion of married people was decreasing while the proportion of cohabiting couples was increasing, as was the proportion of births out of wedlock (Frejka 2008; Lesthaeghe and Moors 2000; Lesthaeghe and Neidert 2006; van de Kaa 2002). Theorists of the Second Demographic Transition (SDT) argue that these changes were not only demographic in their nature but that they were also linked to changes in peoples' values (Lesthaeghe and van de Kaa 1986). As a result of increasing living standards, weakened normative regulations, increasing gender equality and female autonomy, people discovered their need for self-development and self-fulfilment. New lifestyle choices, related to the rise of higher-order needs (Maslow 1954) and self-realisation, led to changes in family formation behaviours (Surkyn and Lesthaeghe 2004).

Although the SDT does not offer an explicit explanation of how ideational changes are related to the increasing proportion of non-marital births, from its arguments it follows that more egalitarian people with more secular values would practice new living arrangements to fulfil their needs for self-development and individualism (Lesthaeghe and Neidert 2006; Surkyn and Lesthaeghe 2004). In other words, more liberal people are more likely to choose to cohabit with a partner without being married, live alone, or have a baby within a non-marital union than those who are less liberal. Previous research interpreted the diffusion of new family behaviours, including non-marital childbearing and cohabitation, as support for the SDT in the United States (Lesthaeghe and Neidert 2006; Raley 2001) and western Europe (Lesthaeghe 2010; Lesthaeghe and Moors 2000; Surkyn adn Lesthaeghe 2004; van de Kaa 2002).

The SDT was originally formulated to understand changing family behaviours in the United States and western Europe, as countries belonging to the Soviet Bloc had completely different experiences. For example, when the baby boom was occurring in western Europe, central and eastern European countries were experiencing fertility decline. In the 1970s and 1980s, due to pro-natalist policies, the centrally planned economy, and full employment (of both men and women), fertility rates stabilised around replacement level in Hungary. Furthermore, early and universal marriage, low age of childbearing, high rates of first and second births as well as low rates of childlessness characterised the country (Frejka 2008; Hoem *et al.* 2009). In Hungary, changes in values were reinforced by the socialist regime; society became atomised and demobilised,

and people drew back to the privacy of family life (Beluszky 2000). After the mid-1960s, the system had softened and the importance of consumption had increased, though there were limited consumption possibilities (Sobotka 2008). Moreover, there was a general acceptance and imitation of "Western norms" and lifestyles, assuming that these were linked to modern life and economic prosperity (Sobotka 2008; Thornton and Philipov 2009). After the fall of the Soviet Union, and with the implementation of the market economy, uncertainty, anomie, job insecurity, and unemployment characterised Hungarian society (Spéder 2004a, 2006). At the same time, demand for highly educated people, and professional and leisure opportunities emerged. The society was left with weakened norms and institutions and people were therefore ready to adjust their behaviours to the new circumstances (Beluszky 2000; Frejka 2008).

Thus, after the transition, Hungarian society became more similar to western European countries (Spéder 2003). The increased consumption possibilities allowed higher educated people to develop higher-order needs, and in order to be able to fulfil them they could choose alternative means of forming a family. Thus, the SDT anticipates that higher educated people are more likely to experience a single or cohabiting conception than a marital conception compared to their lower educated counterparts. Consequently, lower educated people are expected to be more likely to conceive within marriage than in cohabitation or while being single compared to higher educated people.

On the contrary, it might be that cohabitation and non-marital childbearing reflect structural differences and circumstances rather than ideational choices. In other words, those with lower socio-economic status tend to establish families in these alternative settings (Berrington 2001; Perelli-Harris and Gerber 2011; Perelli-Harris *et al.* 2010). Indeed, studies in the United States (Bumpass and Lu 2000; Seltzer 2004; Thornton, Axinn and Teachman 1995), the UK (Berrington 2001; Ermisch and Francesconi 2000; Hobcraft and Kiernan 2001; Perelli-Harris *et al.* 2010; Seltzer 2004), Russia (Perelli-Harris and Gerber 2011; Perelli-Harris *et al.* 2010), Austria, Italy, France, the Netherlands, West Germany, and Norway (Perelli-Harris *et al.* 2010) have found that cohabitation and non-marital childbearing is associated with lower education and disadvantaged economic position.

Previous studies on Hungary mainly interpreted the spread of cohabitation and non-marital childbearing in the framework of the SDT (Bradatan and Kulcsár 2008; Hoem *et al.* 2009; Pongrácz and Spéder 2003; Spéder 2004b). However, it might be that in Hungary, non-marital childbearing characterises disadvantaged social groups as found in other countries. If this is the case, lower educated people would be more likely to experience a single or cohabiting conception than a marital conception compared to their more highly educated counterparts.

Changes over Time in Hungary

In short, over time not only political, societal, and economic but also demographic changes occurred in Hungary. Therefore, I expect that the influence of education on the risk of a single, cohabiting, and marital conception also changed over time. Again, I provide arguments along the SDT and the Pattern of Disadvantage argument.

Before the transition, Hungarian society had traditional values, and the country was isolated from western Europe. During the 1980s, consumerism became more important and people idealised Western norms and lifestyles (Thornton and Philipov 2007). This process accelerated following the fall of the Berlin wall and Hungary became more similar to western European countries (Spéder 2003). Therefore, if the SDT holds true, one would expect the positive effect of education on the risk of a single or cohabiting conception to be greater after the transition than before it.

The Hungarian labour market before the transition was characterised by job security and full employment. Most of the housing was owned by the regime, to which access was granted through the housing allocation system. As the aim of the communist ideology was to decrease social inequalities, differences between social groups were reduced (Ferge 2002). For example, in the early 1980s, the differences between the lowest and highest income groups were four-fold (Spéder 2003). I argue that this might also imply smaller differences between higher and lower educated people's family formation behaviour. Thus, I expect to see small or no differences between educational groups with respect to the likelihood of a single or cohabiting conception in Hungary before the transition. After the transition, differences between the lowest and highest income groups increased to ten-fold (Spéder 2003); job insecurity, poverty, unemployment levels, and house prices also increased. Additionally, the structure of the housing market changed and most housing became privately owned. As it became more difficult for young people to find a stable job and to achieve home ownership, the educational system started to expand. This might imply that the role of education became more important in the process of family formation after the transition. Thus, I would expect the negative effect of education on the risk of a single or cohabiting conception, as anticipated by the Pattern of Disadvantage argument, to be greater after the transition than before it.

Transition to Marriage in Hungary

During state socialism the majority of the couples legitimised non-marital pregnancies by getting married (Pongrácz and Molnár 2003). After the 1980s, as societal values changed and social norms weakened, cohabitation became a more accepted form of living arrangement and non-marital childbearing was

more widely tolerated (Pongrácz and Molnár 2003; Pongrácz and Spéder 2003). In contemporary Hungary, however, marriage is still seen as the preferred living arrangement for couples with children (Pongrácz and Spéder 2003). Therefore, it is important to investigate whether people with different education would marry following a non-marital conception. Studies using data from 2001 have shown that pregnancy accelerates the transition to marriage, whether it happens within cohabitation or while being single (Bradatan and Kulcsár 2008; Kulik 2005). However, we do not know whether the risk of marriage differs between educational groups or by the type of non-marital conception (i.e. single or cohabiting).

DATA

I made use of the first wave of the Hungarian Generations and Gender Survey (GGS) from 2004 (N = 13,540). The dataset has extensive retrospective monthly information on life-course events, such as children's dates of birth and the beginning and end of up to six previous co-residential partnerships (both cohabitations and marriages). To ensure that the stratified, multistage sample is representative of the population aged 21–78 at the time of the interview, I applied weights. This study focuses on women because they are the actual childbearers. Also, previous research has shown that men's retrospective fertility histories are much less reliable than women's (Rendall, Clarke, Peters, Ranjit and Verropoulou 1999).

To answer the research questions, I conducted two sets of analyses. For the first set of analysis, I selected women who were childless at age 15 and did not live with a same-sex partner. These women were observed from age 15 until nine months before the interview to account for births that occurred after the interview. Individuals were censored when they experienced a first conception or, if this did not happen, at age 39; only 15 conceptions happened after this age. Additionally, women whose first child was not biological were deleted from the sample. The sample consists of 7,317 observations (767,590 person-months). After taking into account only those who had valid answers on each variable included in the final models, I ended up with a sample size of 761,980 person months.

For the second set of analysis, I examined a subsample of women (N = 2,034) who experienced either a single or a cohabiting conception.

ANALYTICAL APPROACH

First, discrete time competing risks analysis is employed to examine the risk of a first conception within different union types as compared to no conception. In other words, the risk that a woman is in one of the following situations is modelled: having a first conception while being single, having a first conception within cohabitation, having a first conception within marriage, or experiencing none of these types of conceptions. As these events are mutually exclusive, a competing risks model can be applied. Conducting multinomial logistic regression on a person-months dataset is analogous to discrete time competing risks analysis; it creates unbiased coefficients and produces consistent estimates of the standard errors (Allison 1982). This approach estimates $m - 1$ models, where m is the number of categories of the outcome variable. In our case $m = 4$, where no conception, single conception, cohabiting conception, and marital conception are the possible outcomes. The monthly risk of a conception within a given union type is calculated as the ratio of the number of women who experience a certain type of conception in each month to the number of women who are at risk of experiencing any type of conception.

Results are reported and interpreted based on relative risk ratios. Relative risk ratios, which can be obtained by exponentiating the regression coefficients, express how the risk of the outcome in the comparison group relative to the risk of the outcome in the reference group changes with the variable in question. A relative risk ratio greater than 1 indicates that as the variable in question increases, the risk of the outcome in the comparison group also increases relative to the risk of the outcome in the reference group. That is, the comparison group is more likely than the reference group. Consequently, a relative risk ratio smaller than 1 shows that as the variable in question increases the risk of the outcome in the comparison group decreases compared to that of the reference group.

Second, to examine whether and how education influences the probability of marrying between a non-marital first conception and birth, I study a subsample of women who experienced either a single or a cohabiting conception. Using logistic regression, I estimate the risk of experiencing a marriage between a single or cohabiting conception and birth.

MEASURES

Partnership Context of First Conception

For the first set of analysis, the following variables are defined.

Partnership context of first conception. The dependent variable, partnership context of first conception in a given month, was measured with a categorical variable with categories: no conception (0), single conception (1), cohabiting conception (2), and marital conception (3). The date of the conception was calculated by subtracting 9 months from the date of the birth of the first child. Although this computation assumes that all conceptions end with a live birth, studying conceptions instead of births gives us a more reliable picture of the actual partnership status of the respondents. In this way, "shotgun marriages" and "shotgun cohabitations" that would bias the union status of the respondents at the time of conception can be avoided; it is common that couples immediately marry or start cohabiting once they realise that the woman is pregnant. The variables used in the analyses are described in Table 1.

Table 1

Description and Distribution of the Variables Used in the Analyses, Weighted Estimates

	Competing Risks Models	Logistic Regression Models
	% or mean of variables, N = 761,980	% or mean of variables, N = 2,034
Education		
Low	61.1%	52.0%
Medium	33.0%	42.1%
High	5.9%	5.9%
Age	20.7	20.8
Age^2	454.8	449.5
Period		
1941–1960	19.8%	13.7%
1961–1970	18.1%	13.3%
1971–1980	18.7%	24.0%
1981–1990	16.6%	21.4%
1991–2004	26.8%	27.7%
Type of conception[a]		
Single	30.6%	83.5%
Cohabiting	6.2%	16.5%
Marital	63.2%	NA

[a] This variable has four categories: no conception, single conception, cohabiting conception and marital conception. 'No conceptions' are not taken into account when calculating these proportions.

Note: NA – not applicable.

Education. Respondents' highest attained educational level was classified into three categories: low (pre-primary to lower secondary), medium (upper secondary and post-secondary non-tertiary), and high (tertiary) education. Following Perelli-Harris *et al.* (2010), I created a time-varying variable indicating the highest reached education in a given month, using information on the year and month of reaching the highest educational level at the time of the survey. This calculation assumes that respondents have stayed in school continuously, as no information is available on whether they interrupted their educational careers. Information on the month of graduation was missing for 92 per cent of the respondents. As most schools in Hungary end the school year in June and as this was the most frequent answer among the valid answers (71.23 per cent), I imputed June for the missing values.

Period. This variable indicates the years during which the respondent was at risk of conceiving. To control for the change in the risk of a first conception over time, I created a categorical variable with ten-year periods (1941–1960, 1961–1970, 1971–1980, 1981–1990, 1991–2004). The first category covers 20 years to ensure that the cell sizes are relatively comparable across the categories. Note that 1991–2004 refers to the period after the transition. Each category was entered as a dummy variable in the analyses, with the period '1941–1960' being the reference category.

Age. Respondents' age was measured in years and was calculated for each month. To see the possible non-linear effects of age, a polynomial specification of age (age squared) was also added to the models.

Transition to Marriage

For the second set of analysis, the operationalisation of the control variables (i.e. period and age) and education remains the same as for the first set of analyses. The only difference to be noted is that while both age and education are time-varying in the discrete time competing risks models, in the logistic regression model both age and education are time constant and are measured at the time of conception. Additionally, the following variables are defined.

Marriage. The binary dependent variable indicates whether or not the woman married between the non-marital conception and the birth of the child.

Partnership status at conception. This dummy variable indicates whether conception happened within cohabitation (reference category) or while being single.

DESCRIPTIVE RESULTS

Partnership Context of First Conception

Table 2 shows the distribution of single, cohabiting, and married first conceptions by level of education and time period. Overall, among all educational categories, the proportion of single conceptions increased over time. Furthermore, in all periods, the proportion of low educated women was the highest and that of high educated women was the smallest among those who experienced a conception while being single. For example, after the transition the proportion of single conceptions was 27.9 per cent for highly educated, 35.6 per cent for medium educated, and 42.2 per cent for low educated women. This suggests that higher educated women are the least likely to experience a single conception while lower educated women are the most likely to do so.

Similarly, the proportion of cohabiting conceptions increased in all educational groups over time; this increase was greatest among low educated women and it was smallest among highly educated women. Thus, women with low education are the most likely to experience a cohabiting conception while highly educated women are the least likely. Additionally, the differences in the proportion of cohabiting conceptions have increased considerably among all educational groups after 1981.

Table 2

Number and Weighted Proportion of First Conceptions by Period, Educational Level, and Union Status at Conception (N = 761,980)

	Low			Medium			High			Unweighted Number of Conceptions		
	S	C	M	S	C	M	S	C	M	S	C	M
1941–1960	25.5	0.7	73.8	21.7	0.5	77.9	16.3	1.8	82.0	285	13	872
1961–1970	25.5	1.8	72.7	20.8	0.5	78.7	18.7	0.0	81.3	267	16	871
1971–1980	40.2	3.3	56.5	29.0	1.4	69.5	20.0	2.4	77.6	448	33	873
1981–1990	46.6	11.7	41.7	31.9	7.9	60.2	17.2	2.5	80.3	346	75	605
1991–2004	42.2	30.3	27.5	35.6	17.3	47.1	27.9	10.5	61.7	382	196	522
Total	32.8	5.3	61.9	29.6	7.1	63.3	21.5	6.0	73.6	1728	333	3743

Note: S – single conception, C – cohabiting conception, M – marital conception.

Not surprisingly, the proportion of marital conceptions decreased over time in all educational categories; this decrease was most prominent among women

in the lowest educational category (46.3 percentage points). In all time periods, more educated women were more likely to experience a marital conception than medium educated women who, in turn, were also more likely to experience a marital conception than low educated women.

Transition to Marriage

The proportion of women who marry following a single conception is 56.5 per cent while this proportion is 39.7 per cent for women who conceived within cohabitation. There are greater educational differences in the probability of marrying following a single conception than after a cohabiting conception (Table 3). Just over 60 per cent of women in the lowest educational category who conceived while being single married before the birth of their child; this proportion is 53.2 per cent among medium educated and 47.3 per cent among highly educated women. These figures suggest that more highly educated women are less likely to marry before the birth of the child following a single conception. On the contrary, higher educated women who experienced a cohabiting conception are 6.3 percentage points more likely to marry before the birth of the child than low educated women, indicating a positive relationship between educational level and the probability of marrying before the birth of the child following a cohabiting conception. Additionally, women who were not in a co-residential union when the conception happened are more likely in all educational groups to marry before the birth of the child than those who were cohabiting at the time of conception.

Table 3
Number and Weighted Proportion of Women Marrying Following a Non-marital First Conception by Educational Level and type of Conception (N = 2,034)

	Single Conception (n=1,713)		Cohabiting Conception (n=321)	
	Number	Proportion	Number	Proportion
Low education	555	60.4	56	37.3
Medium education	385	53.2	70	42.6
High education	52	47.3	11	43.6

MULTIVARIATE RESULTS

Partnership Context of First Conception

Table 4 shows the discrete time competing risks models (Model 1 and Model 2). These models estimate the relative risk ratios of a single, cohabiting or marital first conception compared to no conception (baseline category) in a given month. Additional analysis is performed to examine the risk of a cohabiting and single conception as compared to a marital conception. The first model shows the effect of education on the risk of each type of conception, controlling for period and age. Interaction effects between education and period are added in Model 2 to examine the changing influence of education on the risk of a first conception within different union types over time.

Table 4

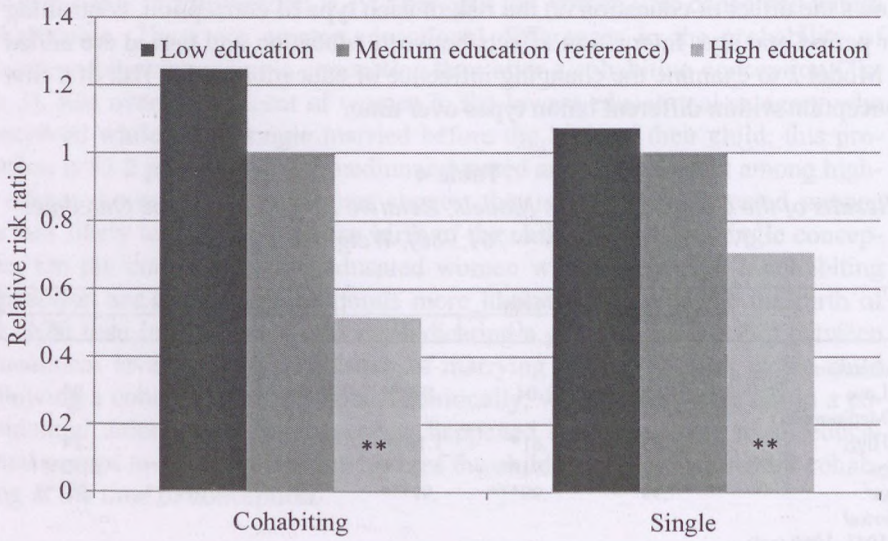
Results of the Competing Risks Models, Relative Risk Ratios, Base Outcome: No Conception (N = 761,980), Weighted Estimates

	Model 1			Model 2		
	S	C	M	S	C	M
Education						
Low	.89	1.04	.83***	1.04	1.28	1.05
Medium (ref)						
High	.83	.61*	1.18**	1.05	4.83	1.24
Age	2.00***	1.91***	4.58***	1.99***	1.90***	4.52***
Age^2	.99***	.99***	.97***	.99***	.99***	.97***
Period						
1941–1960 (ref)						
1961–1970	1.02	2.11	.95	1.06	1.11	1.03
1971–1980	1.72***	4.58***	.89*	1.80**	3.87	1.09
1981–1990	1.54***	14.15***	.71***	1.79**	19.24**	.89
1991–2004	.88	18.08***	.26***	1.13	23.53**	.35***
Interactions						
1961–1970*low				0.99	2.46	.95
1961–1970*high				.98	.00***	.73
1971–1980*low				1.01	1.42	.80*
1971–1980*high				.68	.32	.73
1981–1990*low				.82	.71	.56***
1981–1990*high				.76	.09	1.18
1991–2004*low				.58**	.74	.43***
1991–2004*high				.80	.12	.94

Note: S – single conception, C – cohabiting conception, M – marital conception
Note: $*p < .05$, $**p < .01$, $***p < .001$.

Model 1 shows how the risk of a single, cohabiting, and marital conception changes with education when controlling for period and age. There are no educational differences in the risk of experiencing a single conception. However,

women with high education are almost 40 per cent less likely to experience a conception within cohabitation than their medium educated counterparts; there are no significant differences between low and medium educated women. Finally, low educated women are 17 per cent less likely than medium educated women to conceive within marriage. Similarly, medium educated women are 18 per cent less likely than high educated women to experience a marital conception. These results suggest that education has a negative gradient for cohabiting conceptions and a positive gradient for marital conceptions.



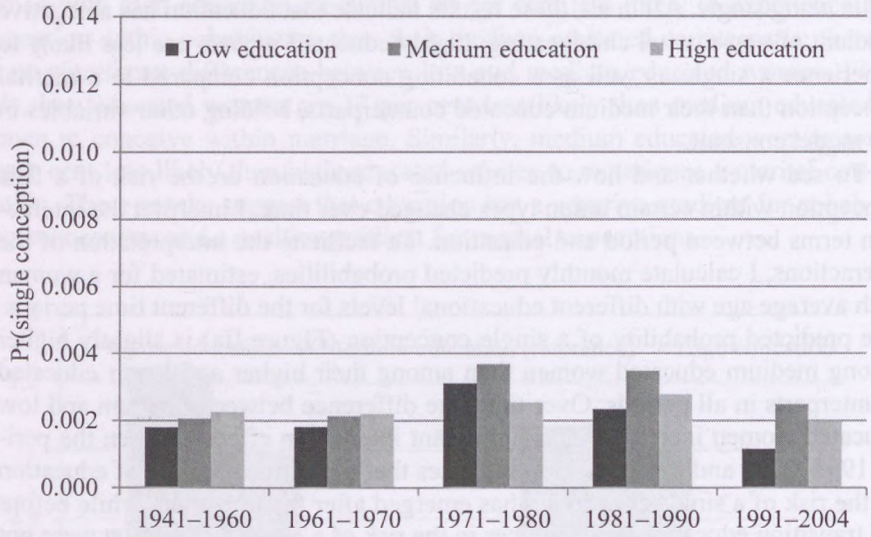
Note: $*p < .05$, $**p < .01$, $***p < .001$.

Figure I
Relative risk ratios of a cohabiting and a single conception compared to a marital conception by education

From these results it is not clear whether there are significant differences in the effect of education on the risk of a single or cohabiting conception compared to a marital conception. For this aim, I change the baseline category in the discrete time competing risks model to marital conception. The relative risk ratios of a single and a cohabiting conception compared to a marital conception are summarised in Figure I. Higher educated women are less likely to experience both a single and a cohabiting conception compared to a marital conception than medium educated women. There are no significant differences between low and medium educated women. In other words, higher educated women are more likely to conceive within marriage than within cohabitation or

while being single. All in all, these results indicate that education has a negative gradient of non-marital childbearing; highly educated women are less likely to experience a single as well as a cohabiting conception compared to a marital conception than their medium educated counterparts, holding other variables in the model constant.

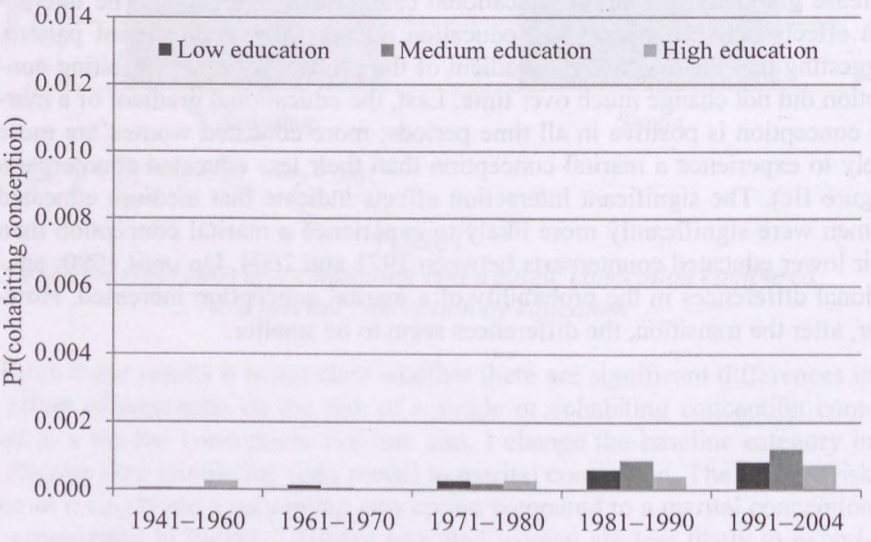
To see whether and how the influence of education on the risk of a first conception within certain union types changed over time, I interpret the interaction terms between period and education. To facilitate the interpretation of the interactions, I calculate monthly predicted probabilities, estimated for a woman with average age with different educational levels for the different time periods. The predicted probability of a single conception (Figure IIa) is slightly higher among medium educated women than among their higher and lower educated counterparts in all periods. Over time, the difference between medium and low educated women increases. The significant interaction effect between the period 1991–2004 and low education indicates that a positive gradient of education on the risk of a single conception has emerged after the transition, while before the transition educational differences in the risk of a single conception were not significant. Examining the significant main effects of period in Model 2 reveals that the probability of medium educated women experiencing a single conception increased between 1971 and 1990. Additionally, the probability of a cohabiting conception was very low between 1941 and 1970; after 1971, it started to increase gradually among all educational categories (Figure IIb). The interaction effects between period and education do not show a consistent pattern, suggesting that the educational gradient of the probability of a cohabiting conception did not change much over time. Last, the educational gradient of a marital conception is positive in all time periods; more educated women are more likely to experience a marital conception than their less educated counterparts (Figure IIc). The significant interaction effects indicate that medium educated women were significantly more likely to experience a marital conception than their lower educated counterparts between 1971 and 2004. Up until 1990, educational differences in the probability of a marital conception increased. However, after the transition, the differences seem to be smaller.



Note: Predicted probabilities are calculated for a woman with average age.

Figure IIa

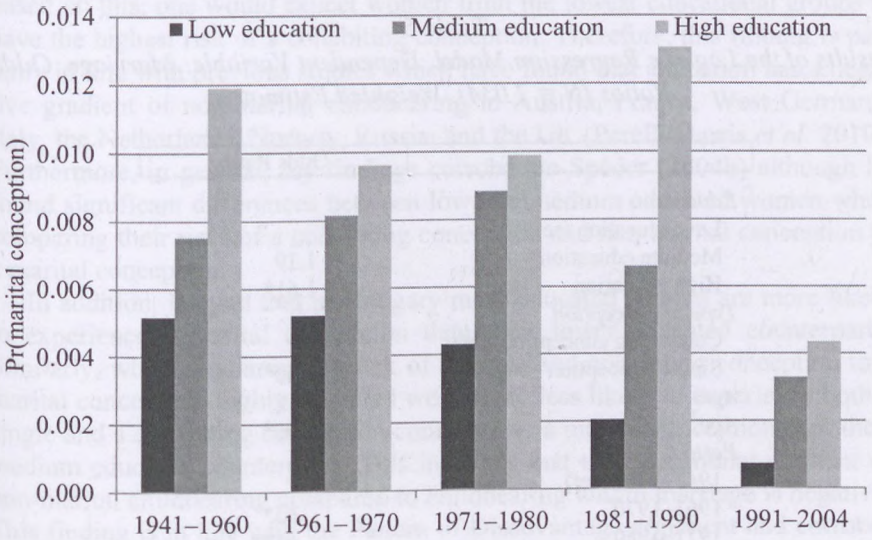
Monthly predicted probabilities of a single conception by education and period



Note: Predicted probabilities are calculated for a woman with average age.

Figure IIb

Monthly predicted probabilities of a cohabiting conception by education and period



Note: Predicted probabilities are calculated for a woman with average age.

Figure IIc
Monthly predicted probabilities of a marital conception by education and period

Transition to Marriage

To examine whether and how education influences women's probability of marrying between a single or cohabiting conception and birth, I apply logistic regression (Table 5). The results indicate that low educated women are almost 60 per cent less likely to marry between conception and birth compared to their highly educated counterparts. Interestingly, there are no significant differences in marriage risks between medium and high educated women or between medium and low educated women (results not shown). Furthermore, women who experience a conception while being single are more than 1.4 times more likely to marry before the birth of the child than their counterparts who experienced a cohabiting conception. To examine whether this influence differs by educational level, interaction effects were tested, but no significant differences were found (results not shown). Finally, there are few changes in the risk of marriage after a non-marital conception over time. Between 1961 and 1990, this risk is about 35–39 per cent less than in before 1961. However, in 1991–2004 the risk of this transition was almost 70 per cent smaller than in 1941–1960. This might indicate that shotgun marriages played an important role throughout the years before 1991.

Table 5
Results of the Logistic Regression Model, Dependent Variable: Marriage, Odds Ratios (N = 2,034), Weighted Estimates

	Odds Ratio
Education	
Low education (ref)	
Medium education	1.19
High education	1.61*
Type of conception	
Cohabiting conception (ref)	
Single conception	1.42*
Age	1.15
Age^2	.99*
Period	
1941–1960 (ref)	
1961–1970	.65*
1971–1980	.61**
1981–1990	.64*
1991–2004	.34***
Constant	1.02

Note: $*p < .05$, $**p < .01$, $***p < .001$.

CONCLUSION AND DISCUSSION

There has been much debate in the literature about the role of education in non-marital childbearing. On the one hand, according to the Second Demographic Transition theory higher educated women adjust their family behaviours in order to be able to fulfil their "higher order" needs. This means that these women are less likely to marry and, thus, are more likely to conceive within a non-marital union than their lower educated counterparts. On the contrary, some studies have argued that disadvantaged, lower educated women are more likely to have a child within these new types of family forms.

This article tested these contradictory expectations for the Hungarian setting by examining how the risk of a single, cohabiting, and marital conception is influenced by educational attainment. I found that higher educated women are less likely to experience a cohabiting conception compared to their medium educated counterparts. Interestingly, the risk of a cohabiting conception did not differ between low and medium educated women. This suggests that in Hungary the divide is between medium and high educated women rather than between those with the lowest level of education and their more educated counterparts. This result seems to support the Pattern of Disadvantage argument, although,

based on this, one would expect women from the lowest educational groups to have the highest risk of a cohabiting conception. Therefore, this finding is partially in line with previous studies which have found that education has a negative gradient of non-marital childbearing in Austria, France, West Germany, Italy, the Netherlands, Norway, Russia, and the UK (Perelli-Harris *et al.* 2010). Furthermore, in general, my findings corroborate Spéder (2004b) although he found significant differences between low and medium educated women when comparing their risks of a cohabiting conception and non-marital conception to a marital conception.

In addition, I found that in Hungary more educated women are more likely to experience a marital conception than their lower educated counterparts. Similarly, when comparing the risk of a single and cohabiting conception to a marital conception, highly educated women are less likely to experience both a single and a cohabiting conception compared to a marital conception than their medium educated counterparts. This indicates that the educational gradient of non-marital childbearing compared to childbearing within marriage is negative. This finding is in line with the Pattern of Disadvantage argument and corroborates previous studies on western European countries (Perelli-Harris *et al.*, 2010) and countries in the region such as Romania (Hărăguş and Oaneş 2009), Bulgaria (von der Lippe 2009), Ukraine (Perelli-Harris 2008), and the Czech Republic (Zeman 2009).

Although education was not found to significantly influence the risk of a single conception, when examining changes in the influence of education on the risk of a single, cohabiting, and marital conception over time, I found that a positive gradient of education on the risk of a single conception emerged after the transition. Before 1990 differences between medium and low educated women were not significant. This finding is in line with the expectations of the SDT, but contradicts previous studies on the US and western European countries which found that low educated women have a higher risk of conceiving while single (McLanahan 2004; Perelli-Harris *et al.* 2010). A possible explanation for this finding might be that after the transition most of the highly educated single women had a non-resident partner at the time of conception but, for example, due to economic obstacles (e.g. common housing) they could not afford to move in together. The dataset did not allow for differentiating between co-resident and non-resident relationships. Additionally, there were no consistent changes in the risk of a cohabiting conception by educational attainment over time. Finally, between 1971 and 2004 the positive gradient of education on the risk of a marital conception became weaker. All in all, I conclude that there were some changes in the educational gradient of a single and marital conception over time, but that this was not the case for cohabiting conceptions. It might be that I did not have enough statistical power to detect significant changes over time because this behaviour has only just started to emerge in

Hungary. Moreover, the results also point out that changes in family behaviours had already started before the transition. After 1971 the risk of a single and cohabiting conception increased both for low and medium educated women while, at the same time, the risk of a marital conception declined. During these periods Hungary was less isolated from western Europe and the values and norms of people became more "Westernised". This result is in line with previous studies which examined union and family formation in Hungary and found that these behaviours had already started to change before the transition (Carlson and Klinger 1987; Frejka 2008; Spéder 2005).

Last, I studied the influence of education on the probability of marrying between conception and birth among women who experienced a non-marital conception. I found that women with high education are more likely to marry between conception and birth than their lower educated counterparts, and that there were no differences between medium and high educated women. Thus, it seems that in Hungary women with a high level of education find it more important to legitimise a non-marital conception through marriage than their lower educated counterparts. This finding is similar to earlier studies conducted in different contexts. For example, in Russia women with low education were found to be the least likely to marry following a single or cohabiting conception (Perelli-Harris and Gerber 2011). Furthermore, I found that women who experienced a single conception are more likely to marry than those who experienced a conception within a co-residential union. It might be that women who conceive in cohabitation do not marry because this setting is increasingly seen to be suitable for childbearing. Another, probably more likely, explanation is data related. Many of those women who do not live in a co-residential union might actually have a non-residential partner. In Hungary, due to constraints of the housing market, young couples often have limited opportunities to move in together. Although the GGS asked respondents if they had a non-residential partner, this question was unfortunately only asked for the time of the interview and no retrospective information was collected. Thus, it may be that most single conceptions actually happened within a non-residential union.

Finally, some limitations of this study should be mentioned. First, retrospective data might suffer from possible recall errors and misreporting. It can be expected that this may be particularly true in case of remembering the starting and ending dates of several cohabiting relationships and less so in case of marriages or childbirths. Conceptions to single women would, in this way, be overestimated relative to conceptions to cohabiting women. Second, some of the findings might be driven by the low prevalence of cohabiting conceptions during earlier time periods. The data may have lacked statistical power to detect significant changes over time, because conceptions within cohabitation only started to become more common in the latest periods. Third, the SDT is not only about the role of education but also about the role of values in the union

and family formation process. As the dataset does not contain time-varying information on the values and beliefs of the respondents, this dimension was not included in the paper. Future research could further investigate this question when later waves of the survey become available. Last, the risk of non-marital childbearing might not only be influenced by education but also by other factors such as urbanity or religiosity. However, while the GGS holds detailed information on union and fertility histories, it does not include time-varying information on these determinants. Future research might be interested in studying the influence of other time-varying factors on the risk of a non-marital conception once later waves become available.

Nonetheless, this study is the first to investigate the changing impact of education on the risk of a first conception and birth in Hungary within different union types, differentiating between single and cohabiting non-marital conceptions and applying competing risks models. I showed that in Hungary, highly educated women are less likely to experience a cohabiting conception compared to a marital conception than their low educated counterparts. Moreover, once a non-marital conception occurs, highly educated women are more likely to marry before the birth of the child than medium or low educated women. These findings indicate that in Hungary family formation behaviours vary by socio-economic status and that these behaviours might indeed play a role in the reproduction of inequalities.

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SPATIAL ASPECTS OF POPULATION DYNAMICS IN RUSSIAN LOCAL ADMINISTRATIVE TERRITORIAL UNITS (1989–2010)

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ABSTRACT: *The paper analyses the patterns of demographic dynamics of settlements and districts of various types in Russia within the framework of the core-periphery model. We test the hypotheses stating that population density is growing in regional centres and in their surroundings; variations in the dynamics of population growth (and its components) within regions are not less prominent than those between regions; differences between peripheral territories are less significant than those between regional centres, and these are the differences which define socio-economic inequality of the regions. The paper also looks into the dynamics of population growth in cities, district centres and rural settlements in relation to the proximity of an administrative unit to a regional centre.*

INTRODUCTION

Countries like Russia which are undergoing depopulation, confront the vital domestic problem of population change. The population size of most administrative units in countries with stable or increasing populations either increases or remains steady; such a situation rarely poses a problem. However, decreasing populations can pose problems for administrative units covering large territories. As a result, researchers' attention is increasingly drawn to investigating differences in demographic dynamics, looking for models and factors explaining depopulation.

In Russia, inter-regional differentiation is amplified as a result of the following factors:

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- The large number of administrative units and inconsistency in the administrative division network.[3]
- Huge territorial sizes, low population densities and underdeveloped infrastructures.
- A relatively small number of cities (for such large territories), particularly larger cities that have a chance of qualifying as growth poles for adjacent territories.
- Administrative centres almost always receiving more financial resources than the territories surrounding them; this situation directly influencing differences in household income and determining internal migration flows.
- A later start to the process of urbanisation than in many other European countries.
- Social and political transformations, interfering with the flow of evolutionary processes of territories and population development, often affecting different parts of the country in different ways.

The above-mentioned factors demonstrate that the classic socio-economic factors of territorial and population development that can be analysed in detail with regard to most European countries are not present in their 'pure' form in Russia. As a result, these factors determine the specificities of the research presented here.

SURVEY OF WESTERN RESEARCH ON INTERACTION BETWEEN TERRITORIAL CENTRES AND TERRITORIES SURROUNDING THEM

From the works of von Thünen (1875) up until the present day, centres and the territories surrounding them have invariably been considered as complementary though different categories. These distinctions are apparent in every respect: psychologically, socially, economically and in infrastructure. Everywhere in the world the same pattern determined by the laws of physics applies

[3] Russia is characterised by a complicated administrative territorial system. It is divided into 83 constituent entities of different types: regions (*oblast'*), areas (*kray*), republics, one autonomous region (*avtonomnaya oblast'*), autonomous districts (*avtonomny okrug*), and the federal cities of Moscow and St Petersburg. Hereinafter they are all referred to as regions. Regions consist of 1868 local administrative divisions (*rayon*), 1099 cities and 1295 urban-type settlements. Local administrative districts are represented either by entirely rural populations (rural settlements) or by mixed populations: rural settlements and cities and other urban-type settlements. Federal entities form seven Federal Districts: Central, North-western, Volga, Southern, Ural, Siberian and Far Eastern.

– the crystallisation of a mass around a core leading to the spreading over the boundaries of the core and a gain in its force and impact on capacity.

The classical "core–periphery model" (Friedmann 1966) postulated that non-uniformity of economic growth and the process of space polarisation inevitably generate imbalances between the centre and the periphery. The centre is an 'engine' of development of the system (because of the constant qualitative transformation to generate innovations) and is simultaneously also the 'pump' for extraction of all types of resources, including human capital, from the periphery.

Modern research suggests that regional processes operate more ambiguously than suggested by Friedmann's theory. Differential urbanisation[4] leads to the appearance of more advanced "centres" and accordingly "peripheries", and multilayered spaces, multiplicities of cores and peripheries of polarisation.

Research on five Canadian peripheral regions conducted by Polese and Shearmur (2006) showed that a decline in the population of peripheral territories at the end of the period of demographic transition became normal. As a result, peripheral and central regions of the country began to differ in terms of population structure and the young population began to be gradually 'washed away' from peripheral regions.

Research by a group of authors headed by Kupiszewski (Kupiszewski *et al.* 1997, 2001a, 2001b) has shown that in countries with high internal migratory mobility, the young population increasingly gravitates towards capitals, centres of regions and other large cities, while other groups of the population remain and "de-concentrate" (Kupiszewski *et al.* 2001a, 2001b). While the concept of the "new economic geography" (Krugman 1991; Krugman 1993; Fujita, Krugman and Venables 1999, and other works by these authors) has focused on monetary and trade flows, other factors promoting the concentration of economic activity and population in one place in comparison to another have been relatively under-researched.

According to Glaeser and Kohlhase (2004), this tendency reduces the ability of models that use new economic geography to explain regional growth in the twenty-first century, in which the advantages of the living conditions of a place have often played a primary role. Partridge, Rickman *et al.* (2006) note that interest in the spatial measurement of population dynamics is unfortunately

[4] The theory of differential urbanisation, developed from 1963 onwards in various publications (Gibbs 1963; Friedmann 1966; Berry (ed.) 1976; Hall and Hay 1980), argues that urbanisation is not a unified process for the whole territory, but the process of changes of stages of population movements. This theory was discussed with respect to the USSR in the 1980s, when the growth of cities and settlement structures slowed down and Russian scholars' works on the subject were published (Kummel 1987; Zajonchkovskaya 1991; Grizaj, Ioffe and Treivish 1991). See Treivish and Nefedova (2002) for a summary of the Russian experience (2002).

limited by a lack of empirical research in the field; this is a result of difficulties obtaining and analysing large-scale spatial information (Hanson 2001). Partridge, Rickman et al. (2006) analysed the results of the dynamics on population changes in a core–periphery context, by looking at the potential relationships between local administrative units in the USA and cities of different size or rank in the urban system. They revealed that different trends exist in the dynamics of population and migration interaction, with the nearest cities depending on different factors such as the population size of the nearest metropolitan area.

Differences in population dynamics in central, semi-peripheral and peripheral areas have also been noted in studies across Germany (Spangenberg and Kawka 2008). In addition to an analysis of current trends, they provide forecasts based on statistical data for municipalities. According to these forecasts, from 2005 to 2025 the population of the centres and the peripheries will have different dynamics, and population decline will increase as the distance from the centres increases. It has been noted that this situation leads to the ageing of the population (Swiaczny, Graze and Schlömer 2008).

RESEARCH ON INTER-REGIONAL INTERACTIONS BETWEEN TERRITORIES IN THE USSR AND RUSSIA

The concept of the core–periphery was initially received with some scepticism in the Soviet period: the incompleteness of the process of urbanisation,[5] highly regulated redistributive financial and commodity flows, and also regulated development of dispersed economic activity worked to partially level core–periphery distinctions. Nevertheless, Grizaj, Ioffe and Trejvish's (1991) study "The centre and periphery in regional development" is partly based on Soviet empirical data. Despite the Soviet government's guidelines, which aimed to eliminate distinctions between territories, cities and villages, real contrasts between core and periphery were in actual fact quite pronounced.

[5] Our use of the term 'incomplete' urbanisation refers to the complex of factors and conditions such as the later start of urbanisation and its high pace in the twentieth century, its low starting point (according to the first all-Russian census in 1897, only 13 per cent of the population lived in urban settlements compared with Germany and France where the same level was reached in the 1850s), and sparseness of networks linking cities, etc. All of these have led to the situation that despite Russia having comparable levels of urbanisation to many Western countries now (73%, as compared with Canada – 80%, USA – 79%, France – 77%, Germany – 73%, Italy – 68%), the qualitative characteristics of urbanisation as urban life-style, and different services, including leisure opportunities and urban commodities are far from comparable with these countries (for example water and gas supply systems, and so on). Treivish and Nefedova indicate that the level of 'real' urbanisation in Russia stands at about 59 per cent (Gorod i derevnja…2001).

The contrasts that existed in Soviet times have grown thanks to the structural economic crisis of the 1990s, when "economically feeble areas became even more feeble, and the strong even stronger". Research conducted in the 1990s by Nefedova (2003), Trejvish and Nefedova (1994, 2002), Nefedova and Ioffe (2001), and Zubarevich (2000, 2003) has shown that "weakness" was a result not only of peripheral location. Several dichotomies operate in the Russian territory, such as north vs. south, Russian ethnic regions vs. ethnic republic regions6, and old industrialised western regions vs. newly developed eastern ones.

Nevertheless, core–periphery gradients appear to be universal and apply both in the north and the south, in Russian and ethnic regions, and at different levels of administrative units, from the federal level to small municipal units. However, very little research has been done at the most local level. Exceptions are the studies by Nefedova (2003) and Trejvish (2009). In-depth transformational changes at the turn of the 1990–2000s, which coincided with the most serious demographic changes (beginning of depopulation), led to an increase in the dichotomy between centres of economic activity and the provinces.

What is valued by the inhabitant of the capital of a region is not necessarily valued by a person living in a province. Political freedom, democracy, freedom of movement, orientation towards success, according to all-Russia surveys, are emphasised as important by a considerable proportion of inhabitants of the capital and, to a lesser degree, big cities, whereas they are much less valued by inhabitants of the small cities, and especially villages (Hamzina 2004).

Centres and peripheries live in different "social dimensions" to an even greater degree than during the Soviet period. According to Kagansky (2001), in the centres, work is related to tertiary activities (politics, mass media), while in the periphery it relates to industrial production (manufacture, subsistence economy), or according to Trejvish and Nefedova (2002) "in the centre life depends on the dollar exchange rate; in the periphery, on the weather and the potato crop".

What does it mean when a territory lacks a developed centre? The already existing centres will try to pump different resources from the periphery, including human resources, and this desire will increase, which will also strengthen and consolidate the distinctions between them thereby weakening the periphery. The socio-economic disparity between centres and peripheries contributes, via migration, to forming different dynamics of their population size.

[6] By "ethnic region" we mean regions that are named after one of the ethnic groups living on the territory of Russia (for example Tatarstan, Bashkortastan and Tuva republics). The name does not mean the majority of the population belongs to those ethnic groups. For example, according to the 2002 census in the Jewish autonomic *oblast'* the percentage of Jews in the total population was 1.2 per cent, in Karelia the Karels made up only 9.2 per cent, etc. Nevertheless, "ethnic regions" in Russia usually have special relationships with the federal centre and enjoy more privileges. That, in turn, can influence the migration process and dynamics of the population in general.

Based on these assumptions, this paper investigates several hypotheses. According to the centre–periphery concept of spatial development, in terms of economic transformation and depopulation one of the most important factors is human resources. The almost total absence of research on these topics at micro-territorial level for all of Russia[7]) makes such an analysis a valuable research task. To fill-in this gap, we investigate the following hypotheses:

1. The farther a peripheral region is from the centre, the larger the scale of reduction of its population.
2. Local administrative units located a relatively short distance from the centre (e.g. 'commuter towns') do not necessarily lose population when their location is in the zone of influence of the centre.
3. The higher the population of cities that are non-administrative centres of regions, the higher the probability that they will maintain their populations.
4. Local administrative centres of "local administrative divisions" have advantages compared to surrounding rural areas.
5. After the acute social and economic transformation of Russia in the 2000s, the centre–periphery gradients have become more marked.
6. The "distance" from the ordinary town to the centres of the regions plays a more important role than the "urban" status of these towns.
7. The centre–periphery gradient may manifest itself differently in different parts of the country, depending on the characteristics of the regional settlement system, the ethnic structure of the population and other factors.

DATA AND METHODOLOGY

The data for the study are based on the population censuses of 1989, 2002 and the preliminary results of the 2010 census on cities and local administrative regions of Russia, so-called "small territories" or local administrative territorial units (ATUs). In total, the information was collected from 2341 ATUs.

The data on the population of cities, the administrative centres of ATUs (the local administrative division's centre[8]) and the rural population of small territories were analysed separately. Several difficulties were identified in the course of analysis of population dynamics:

[7] See: Artobolevsky, Zajonchkovskaya and Mkrtchyan 2004; Makhrova, Nefedova and Treivish 2008.

[8] The data on the populations of centres of administrative divisions are available for 1989–2002, data for the following inter-census period have not yet been published.

1. The first difficulty is 'secret' cities (*Zakrytye Administrativno-Territorialnie Obrazovania - ZATOs*[9]). In 1994 data on them became accessible. Analysis is therefore based on population censuses of 2002 and 2010. In the population census of 1989, the population of ZATOs was included in the population of other administrative-territorial units, and the methodology of allocation of the population data was kept secret. It is recognised that the population of a ZATO was sometimes included in the population of another federal unit of the Russian Federation, but more often than not it was included in to the population of the central city of the regional federal unit or capitals of ethnic republics. Owing to these methodological and statistical differences, it was not possible to trace the dynamics of the majority of the ZATO population for the period 1989–2002. There were 33 ZATOs located within the territories of the 18 federal units of the Russian Federation. For the period 2003–2010 this problem is no longer relevant.
2. The second difficulty is that during the inter-census period there were significant administrative–territorial changes in the status of some towns and villages[10], including changes of the boundaries of some ATUs. For example, in 2004 21 urban settlements changed to village status, one local administrative division was formed and another one abolished. This is related to the fact that during the Soviet period it was favourable and prestigious for a rural settlement to become a town. During the period of transition and the economic crisis of the 1990s the rural settlement status became more of an advantage because of benefits in the cost of electricity, widespread privatisation of land in the countryside, tax privileges, etc. (Borodina 2005). Numerous administrative changes certainly hinder comparison of data on some cities and regions, and of the city and rural population. It was necessary to combine the data of some ATUs in order to carry out the analysis.

[9] Secret administrative formations (*ZATOs*) were created during the Soviet era, and were under the supervision of the Ministry of Defence or the Ministry of Atomic energy. In 1994, by Governmental Order (4 January 1994 r. № 3-p), they were opened up, including their statistics. In total, 46 such settlements appeared on the map and that resulted in a different population distribution system compared with previously. In the Moscow, Chelyabinsk, Sverdlovsk, Murmansk and Krasnoyarsk regions, four to six 'new' settlements emerged. Sixteen regions experienced smaller changes. Information about them is still only partly analysed. Some ZATOs still keep the secret regime limitations. The opening of the ZATOs increased the urban population of Russia by 1.1 million people. The majority of ZATOs are cities with a population exceeding 25,000 people, eight of them having more than 50,000 inhabitants at the moment of disclosure. See more: Lappo and Polyan 1997.

[10] See Vserossiiskaya perepis naselenia 2002 tom1 Chislennost I razmeschenie naselenia,Prilozania i Izmenenia v administrotivno-territorialnom ystroistve cybiektov Rossiiskoi Federatsii za 1989–2002.

3. During inter-census periods the data on four federal units of the Russian Federation were not analysed: the republics of Dagestan, Ingushetia, Kabardino-Balkariya and Chechnya (comprising 97 local ATUs). Research estimations have shown that in these republics serious distortions of population numbers took place at the time of census. According to the population census of 2002 the results of such "irregularities" in these republics' census information were evaluated as being as large as one million people (Mkrtchyan 2004; Maksudov 2005; Bogojavlensky 2008); similar problems have been raised concerning the 2010 census. This makes comparing the populations of these republics meaningless and would affect the results at the aggregated level.
4. Information on Moscow and St. Petersburg is not analysed in this article. The population dynamics of these two cities constitute a separate research project that would influence the data of other centres dramatically. This is because the population of Moscow increased from 1989 to 2002 by 1252 thousand people (or by 14.1 per cent), and for 2003–2010 by 1388 thousand people (13.7 per cent). According to the official administrative–territorial division, the Moscow and Leningrad regions (*oblasts'*) are governed independently from Moscow's and St. Petersburg's federal units.

RESEARCH METHODOLOGY

To analyse population dynamics for the inter-census period of 1989–2002 and 2003–2010, the local ATUs were grouped as follows:

1. Regional centres (republic, *oblast'* and *kray* capitals) were combined with their satellite settlements and the local administrative division for calculation. For example, the city of Kostroma was grouped together with Kostroma administrative division (Kostromskoy *rayon*) of Kostroma region (Kostromskaya *oblast'*). If the territory of the regional centre borders more than one ATU, this population was also included in the data on centres. We offer two reasons for this: firstly, by the existence of a common local labour market within the borders of this agglomerative area with intensive daily commuting. Secondly, because during inter-census periods the most frequent administrative–territorial changes took place between regional centres and the closest local administrative divisions, and these changes are very difficult to calculate. A special approach was taken for the Moscow and Leningrad administrative divisions. Their 'centres' were defined as the sum of the population of ATUs

that bordered the officially delimited territories of Moscow and St. Petersburg (while the cities themselves were not included in the analysis).

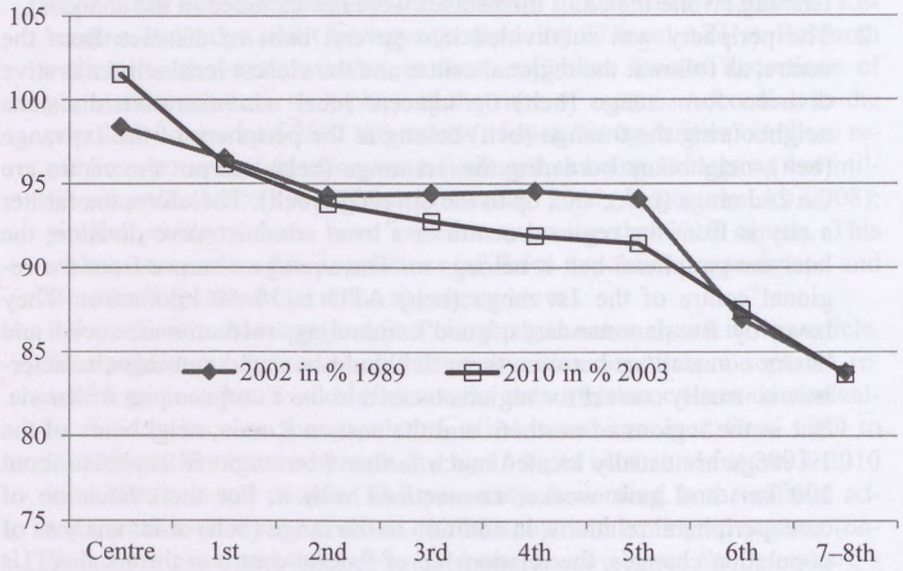
2. The periphery was subdivided into several belts of distance from the centre, as follows: the regional centre and the closest local administrative division form range (belt) 0; adjacent local administrative divisions neighbouring the 0 range (belt) belong to the periphery of the 1st range (belt), neighbours bordering the 1st range (belt) and not the centre are the 2nd range (belt), etc., up to the 8th range (belt). Therefore, the farther a city is from the regional centre or a local administrative division, the later the peripheral belt it belongs to. The average distance from the regional centre of the 1st range (belt) ATU is 30–50 kilometres. They have, by Russian standards, good commuting, recreational, social and labour connections between them. It should be noted that this characteristic is usually correct for regions located in the European part of Russia. But in the regions of northern and the eastern Russia, neighbours of the 1st range are usually located much farther from regional capitals (about 100 km) and have weaker connections with it. For the evaluation of core–peripheral relations, in addition to the range (belt) order analysis of population changes, the relationship of federal centre to the local ATUs was measured in kilometres.[11] The division of the territory into the centres and the periphery of different range (belt) based on distance in kilometres from the centres allows calculation and analysis of trends in population dynamics in these areas of different ranks and different distance from regional centres.

KEY FINDINGS

Core–peripheral gradient and the dynamics of the population

The grouping of local ATUs according to distance from the regional centre in both inter-census periods shows the clear relationship between distance and population dynamics: the farther from the regional centre, the more intensively the population is reduced (Figure I). In the period 1989–2002, the decline in the population from the regional centres to the ATUs of 1st and 2nd ranges of distance increased particularly quickly. By contrast, there are practically no distinctions in the dynamics of the population on other peripheral regions from the 2nd to 5th ranks of distance from the regional centre. In 2003–2010 the decrease in the population continued to intensify the further one travelled from the regional centres.

[11] See RSFSR: administrativno-territorialnoye deleniye na 1 yanvarya 1986 g. Statisticheskii spravochnik. M.: Presidium VS RSFSR, 1986. 512 p.



Note: The Figure does not include ATUs of the republics of Dagestan, Ingushetia, Kabardino-Balkariya and Chechnya.

Figure I

Changes in the populations of local ATUs by distance from the regional centre, Russia, 1989–2010

1st; 2nd; 3rd; ...7–8th ranges ATUs from regional centre

This dependence is typical of the whole country, but some regional peculiarities are visible in Table 1. For example, in 1989–2002 the further an ATU was located from the regional centre in Central, North-western and the Siberian Federal Districts, the more intensively it depopulated. But in the Volga and Ural Federal Districts, for the period of the 1990s[12], there was no such tendency and federal centres lost their populations more intensively than neighbouring ATUs of the 1st belt. By the next decade (the 2000s) this situation is not observed; the population of the first rank ATUs of the given regions already have better dynamics.

[12] Hereinafter under "1990s" we refer to the inter-census period of 1989–2002, and under "2000s" the period 2003–2010.

Table 1

Change of population of the local ATU by Federal Districts depending on distance from regional centre – gain/decrease in %, from 2002 to 1989 and from 2010 to 2002

Locale	Federal Districts						
	Central	North-western	Southern*	Volga	Ural	Siberian	Far Eastern
2002 in comparison to 1989, increase/decrease							
Total	**-4.9**	**-9.7**	**6.8**	**-2.5**	**-3.8**	**-6.3**	**-16.7**
Centre	-2.2	-4.0	7.1	-2.8	-2.6	-1.4	-7.7
1st range	-3.6	-8.1	6.5	-0.4	2.3	-6.6	-21.6
2nd range	-6.5	-11.1	8.2	-5.7	-5.5	-9.1	-22.6
3rd range	-6.3	-15.4	6.0	-3.2	-10.5	-10.4	-22.6
4th range	-9.7	-15.2	6.4	0.2	-10.7	-7.3	-24.2
5th range	-4.8	-19.3	1.9	-0.7	-6.1	-9.7	-22.6
6th range	-12.1	-37.2	-5.3	-0.9	-5.7	-10.9	-28.0
7–8th ranges	-21.2	-	-6.3	-	-11.9	-17.9	-5.7
2010 in comparison to 2002, increase/decrease							
Total	**-2.8**	**-6.5**	**-0.5**	**-4.3**	**-2.3**	**-4.3**	**-5.8**
Centre	4.0	-0.1	2.2	-0.7	2.9	2.8	0.3
1st range	-0.9	-6.7	-3.1	-4.6	-2.1	-5.7	-7.9
2nd range	-6.3	-10.5	-0.9	-7.6	-4.5	-8.1	-10.6
3rd range	-6.8	-13.1	-0.4	-7.6	-9.8	-10.5	-13.3
4th range	-10.6	-12.1	-3.9	-6.2	-11.8	-9.0	-13.5
5th range	-9.1	-13.8	-5.8	-8.4	-5.8	-11.5	-9.4
6th range	-10.4	-27.2	-7.7	-8.4	-14.3	-11.0	-17.7
7–8th ranges	-21.3	-	-9.9	-	-14.1	-17.5	-8.9

**Note*: does not include ATUs of Republics of Dagestan, Ingushetia, Kabardino-Balkariya and Chechnya.

In the Southern Federal District (SFD) in the 1990s population growth was marked in all groups of ATUs, except ATUs of the 6th and 7th ranges, which included only a few ATUs.

In the 2000s, the population dynamics of the centres of the SFD differed from the periphery of the regions. Thus, after the time of social and economic transformations in the nineties, the core–peripheral gradient of population dynamics increasingly manifested itself and spread its effects to a growing number of territories of Russia.

In comparison with the previous inter-census period, in 2003–2010 the positive dynamics of the centres of population growth is visible in the majority of

regions.[13] In spite of the general population loss in the Central Federal District the population of centres grew by four per cent (bear in mind that the city of Moscow is not included in the analysis). Unlike the previous period, centres increased their populations even in the Siberian and Far Eastern Federal Districts.

The dynamics of the population in the local ATUs depends both on the existing system of settlements[14] and on common regional tendencies. Thus, in the Far Eastern and North-western Federal Districts, which showed the most intensive reduction in population during both inter-census periods, the marked population loss manifested first and foremost in the regional peripheries. In the 2000s, the differences in the dynamics of population change of the centres between Federal Districts were smaller than differences between the peripheries of these regions.

The positive population dynamics of the regional centres are supported by migration inflows of the population from their regions; in many regions this migration has a clear centripetal direction (Mkrtchyan and Karachurina 2006).

Regional centres are especially attractive to youth. Estimates for the 19 administrative *oblasts* of Russia in the 1990s suggest that migration supply provided about 25–30 per cent of the increase in the number of youth of the 15–19 and 20–24 age groups to regional centres. The attractiveness of centres relates to the availability there of different vocational and tertiary education institutions (Karachurina and Mkrtchyan 2012).

The grouping of local ATUs by distance (in kilometres) from regional capitals shows a somewhat different pattern of dependence on the dynamics of a population on a core–periphery gradient (cf. figs. I and II). The fastest population decline can be observed from the centre to the group of ATUs 30–50 kilometres away, from 250 kilometres and from 500 kilometres away. In ATUs that are mid-distant from the centres (50–250 km) the losses are less evident. This is due to the fact that 'second-rank' centres are situated at a distance of 150–250 kilometres, for example, Stary Oskol in the Belgorod region (Belgorodskaya *oblast'*) or Pyatigorsk and Mineralnye Vody in the Stavropol region (Stavropolskiy *kray*), Kamyshin in Volgograd region (Volgogradskaya *oblast'*), Nakhodka in the Primor'ye region (Primorskaya *oblast'*), etc. They often work as centres of attraction for people from surrounding regions, so the loss of population in this belt is less pronounced.

[13] We mean the centres of the regions and their local administrative divisions. For example, in Kostroma region (Kostromskaya *oblast'*) the city of Kostroma together with Kostroma administrative division (Kostromskoy *rayon*).

[14] In Russia one can find different types of population settlements: areal in the Northern European and Asian parts of Russia, linear (along with the Volga river in Volga Federal District), dispersed isochronic, continuous (Central Federal District) and agglomerative.

Let us take the Volga Federal District as an example. The peculiarities of the administrative–territorial division of this area (large regional territories, a high number of local ATUs and the settlement network) have led to the formation of important second-rank centres. This is what has happened in the Samara and Saratov, Bashkortostan, Tatarstan and other regions of the Volga Federal District. These cities, with populations of more than 100,000 people, are located a fair distance from the regional centres. So the joint impact of these two factors (population size and distance from regional centres) allows these cities to become centres of gravity for migrants from adjacent areas, while at the same time they fail to 'donate' their populations to the regional centres as intensively. This allows second-rank cities to maintain stable population sizes. This stability, however, is maintained as a result of increasing migration inflows or, in the worst case, population balance as a result of the in-migration of young people. This may also be due to the ethnic diversity of the population of the Federal District, where some ethnic groups started the demographic transition a little earlier than others.

Thus, at this stage we can say that the centre–periphery gradient in population dynamics of territories in Russia is disturbed as a result of the joint impact of factors: a moderate (though not great) distance from the regional centre, a large population size and the social and economic importance of second-rank cities. As far as we know from the literature, in European countries the joint impact of these two factors has had no such effect on population dynamics, since in regions with smaller territories second-rank centres may not be as distinguished. In addition, the distances between centres and peripheries are usually not as great, and this does not allow them to develop as centres that are attractive to migrants. In Russia this is the case with the regions of the Central Federal District, where regions have smaller territories (in comparison to the Volga Federal District) and, as a rule, do not have second-rank cities that are important from a social, economic or population point of view. Here we should also note that all the possible migration flows in the Central Federal District lead to Moscow itself, whose labour market requires constant replenishment.

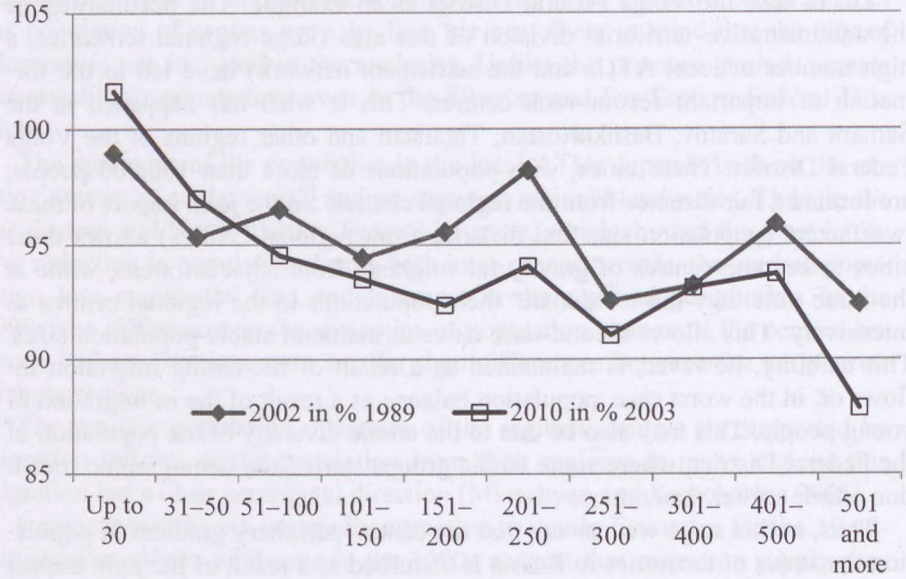


Figure II
Change of population of local ATUs, by distance from the regional centre in km, 1989–2010

The sharpest decline in population in the most distant periphery is explained by the fact that such distant peripheries only exist in the Far Eastern, Siberian and North-western Federal Districts (only a few ATUs in two other Federal Districts belong to that category). They are among the ATUs with the largest population losses because of internal migration to other regions as part of the process known as western drift, which will be expanded upon later on, and because these distant ATUs are also unattractive to international migrants. These ATUs are the most distant (located more than 500 kilometres from the regional centre) and the least populated (according to our estimates, 5.7 million people in 1989, 4.4 million in 2002 and 3.9 million in 2010). They have the largest territories, and in the last two decades have lost one third of their populations (Table 2).

Table 2

Change of population of local ATUs by Federal Districts and distance from the regional centre in km, in %

Distance from the regional centre	Federal Districts						
	Central	North-western	Southern	Volga	Ural	Siberian	Far Eastern
	2002 in comparison to 1989, increase/decrease						
Average							
(km)	**-4.9**	**-9.7**	**6.8**	**-2.5**	**-3.8**	**-6.3**	**-16.6**
Up to 30	-1.5	-3.0	7.7	-2.4	-2.0	-1.1	-6.4
31–50	-4.3	-7.8	3.1	-4.9	-6.1	-3.3	-21.3
51–100	-6.0	-5.3	6.1	-0.8	-6.2	-6.5	-19.8
101–150	-9.0	-6.0	8.3	-5.2	-9.1	-9.3	-10.1
151–200	-9.0	-14.4	7.0	-4.9	-5.4	-5.7	-9.2
201–250	-9.3	-19.4	8.8	0.6	3.4	-8.9	-18.0
251–300	-7.0	-22.1	0.2	-0.4	-15.5	-10.9	-19.2
301–400	-8.0	-14.9	4.9	-2.0	-5.7	-10.8	-15.2
401–500	-19.8	-16.5	6.5	5.0	-2.5	-4.2	-20.1
501 and more	-	-22.7	-	-5.3	-2.0	-16.4	-33.4
	2010 in comparison to 2002, increase/decrease						
Average							
(km)	**-2.8**	**-6.5**	**-0.5**	**-4.3**	**-2.3**	**-4.3**	**-5.8**
Up to 30	2.3	-0.2	2.4	-0.8	3.8	3.3	1.4
31–50	-2.1	-3.4	-0.4	-4.1	-4.1	-4.7	-5.9
51–100	-5.7	-7.3	-2.9	-5.3	-6.6	-7.8	-3.7
101–150	-6.8	-5.4	-2.7	-6.8	-8.2	-9.4	-6.7
151–200	-8.3	-12.0	-1.2	-8.9	-7.3	-11.2	-10.2
201–250	-9.5	-14.,8	-0.1	-5.8	-4.2	-10.1	-10.5
251–300	-10.4	-16.1	-5.6	-6.9	-9.0	-9.8	-12.2
301–400	-9.9	-12.2	-0.8	-7.7	-6.1	-7.8	-10.1
401–500	-22.1	-13.6	-1.4	-8.5	-1.7	-8.9	-11.1
501 and more	-	-16.9	-	-12.3	1.0	-11.9	-12.8

Note: does not include ATUs of Republics of Dagestan, Ingushetia, Kabardino-Balkariya and Chechnya.

Selection of centre and periphery involves a method that ranges the neighbours, and examines the dependence of dynamics of the population on distance from the centre. This clearly demonstrates the interdependence between population decline and distance from the centre, particularly in the Central, North-western and Siberian Federal Districts.

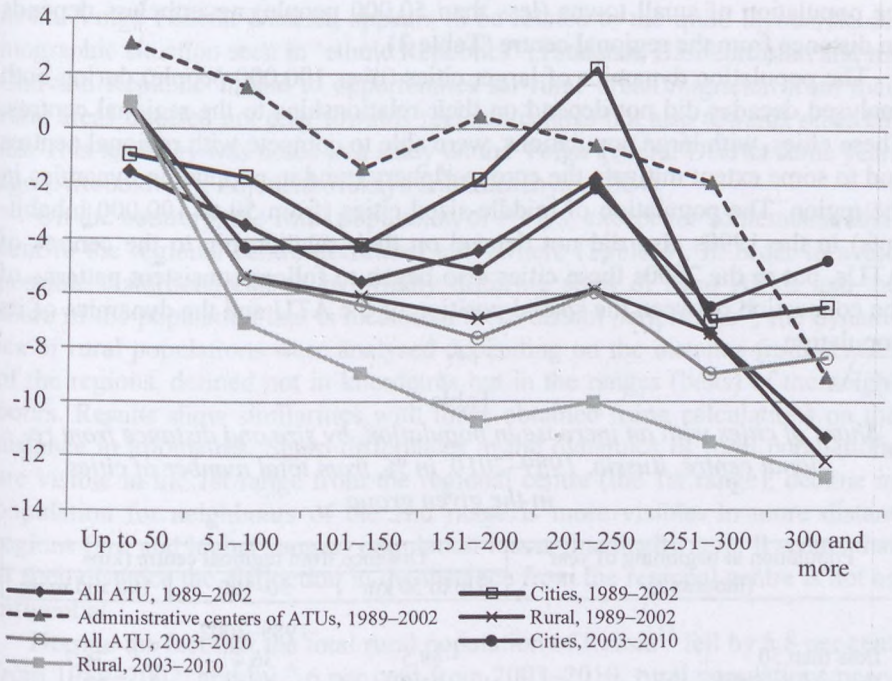
In the Volga Federal District in 1989–2002, the link between population decline and distance from the regional centres was not apparent, but in 2003–2010 it was shown within a distance of 200 kilometres from the centre. However, distinctions in dynamics of population in 1989–2002 and 2003–2010 between distant (over 200 km) and close (30–50 km) regional peripheries were not apparent in the Southern and Ural Federal Districts; their population sizes were declining everywhere except in regional centres.

DISTINCTIONS IN THE DYNAMICS OF THE POPULATION IN SETTLEMENTS OF DIFFERENT SIZES AND STATUSES

Other than distance from the regional centre, what else could explain the non-uniform dynamics of population change of local ATUs during the intercensus periods of 1989–2002 and 2003–2010? In order to answer this question we clustered the data. Among ATUs the following were grouped: a) cities (except Moscow and St. Petersburg); b) the rural population of ATUs (administrative divisions without urban population); c) administrative centres of ATUs (centres of local administrative divisions). These could be of various population and urban statuses, the main principle being the administrative function of the settlement. All the above-stated three groups of ATUs have been ranked and analysed based on their distance from the regional centre (Figure III).

It turns out that the hypothesis concerning the influence of proximity/distance of local ATUs from the regional centre on population dynamics of the cities (group a) does not fully explain the observed population dynamics. The population of all cities (except regional centres) for the period 1989–2002 fell by three per cent. However, the population of cities increased within the range of 200–250 kilometres distance from the centre.

Analysis of population changes of Federal Districts shows that at this distance from the centre, population growth was marked in the cities of the Volga (4.6 per cent), Ural (2.4 per cent) and Central (0.9 per cent). So there was an increase in population in the Volga Federal District in several middle and large cities, and in the big cities of Tatarstan and Bashkortostan (Belebey, Salavat, Meleuz, Elabuga, Neftekamsk, Nizhnekamsk), as well as among small and recently established towns with a relatively young population such as Janaul and Nurlat.



Note: data on the population of regional centres (administrative centres of ATUs) according to the 2010 census has not yet been published at the time of writing.

Figure III

Change of population of selected groups (cities, administrative centres of ATUs and rural ATUs), by distance from regional centre in km, Russia, 1989–2010, in %

In the Ural Federal District, 'oil cities' such as Pyt'-Yach, Nefteyugansk, Lyantor and Surgut, which enjoyed significant investments in their development, grew quickly. In the Central Federal District on the border with the Ukraine, the dynamically developing metallurgical centre of Stary Oskol also grew. In the next decade (2003–2010) the population of these cities fell, but more slowly than in distant cities (50–150 kilometres).

The reasons for the more positive dynamics of the population in the above-mentioned cities differ. Ural's cities increased in population thanks to the oil economy and an inflow of people from across the country; their growth is not connected in any way to them being regional centres as such. We would suggest that the cities of Tatarstan and Bashkiria are vivid examples of formation of centres of gravity that may be called second-rank centres, as described earlier. The analysis of population dynamics of cities by size shows that changes in

the population of small towns (less than 50,000 people) nevertheless depends on distance from the regional centre (Table 3).

The population dynamics of larger cities (over 100,000 people) during both analysed decades did not depend on their relationships to the regional centres. These cities, with large populations, were able to compete with regional centres and to some extent mitigate the core–periphery trend in population dynamics in the region. The population of middle-sized cities (from 50 to 100,000 inhabitants) in the 1990s also did not depend on their relationship to the centres of ATUs, but in the 2000s these cities also began to follow consistent patterns of the connection between the spatial position of the ATU and the dynamics of its population.

Table 3

Share of cities with an increase in population, by size and distance from regional centre, Russia, 1989–2010, in %, from total number of cities in the given group

Population at beginning of year (thousand)	Distance from regional centre (km)		
	Up to 50 km	50–100	100 and more
		1989–2002	
Less than 50	49.5	36.4	26.7
From 50 to 100	33.3	26.9	37.1
More than 100	52.6	15.8	43.1
		2003–2010	
Less than 50	36.8	23.3	13.2
From 50 to 100	52.9	24.1	21.1
More than 100	47.8	15.8	26.9

The population decline of cities far from regional centres (e.g. more than 100 kilometres) amplified in the 2000s in comparison with the 1990s. For example, in 1989–2002, the positive population dynamics could be seen in a quarter of the small towns, in a third of middle-sized cities and in 43 per cent of the large ones. In 2003–2010, the share of such cities with positive dynamics in each group almost halved. Nevertheless, the larger the city, the more possibilities it had of retaining or even increasing its population in a situation of regional depopulation, independent of its location in the region. In 1989–2002, the population dynamics of the administrative centres of ATUs depended on their distance from regional centres (Figure III). However, in the Volga and Southern Federal Districts the situation was different. For example, in the Volga Federal District population growth was only seen in the administrative centres of the ATUs and it was not related to distance from the regional centre. In the Southern Federal District visible population growth was observed in all types of settlements. Growth of these administrative centres, as well as the peripheral cities

in the Volga Federal District, appears to be related to the quite favourable demographic situation seen in 'ethnic Republics' (Tatarstan, Bashkortostan and the Chuvash Republic[15]), and to opportunities for rural–urban migration from their rural areas directed not only towards regional centres but also towards other cities. This tendency was noted in a study on the Volga Federal District some years ago (Artobolevsky, Zajonchkovskaya and Mkrtchyan 2004).

On the contrary, the rural population of ATUs, except for settlements adjacent to the regional centre decreased everywhere (Table 4). In order to avoid possible distortions caused by widely differing sizes of rural ATUs and the share of the population that is located in these distant peripheries[16], the dynamics of rural populations were analysed depending on the distance from centres of the regions, defined not in kilometres but in the ranges (belts) of the neighbours. Results show similarities with those obtained using calculations on the distance in kilometres. Sharp differences in the dynamics of rural populations are visible in the 1st range from the regional centre (the 1st range); decline in population for neighbours of the 2nd range is more visible. In more distant regions (3rd and higher ranges) population losses practically stop. It seems that at such distance the distinction in the distance from the regional centre is not as influential.

Despite the fact that the total rural population of Russia[17] fell by 5.8 per cent from 1989–2002, and by 7.6 per cent from 2003–2010, rural populations nearest to regional centres increased. According to our calculations[18], rural populations up to 50 kilometres from regional centres increased during both decades (by 0.8 per cent from 1989–2002, and by one per cent from 2003–2010). The rural population of the local administrative divisions adjacent to the regional centres also grew by 2.7 and 4.5 per cent respectively.

[15] This happened because local ethnic groups were still undergoing demographic transition and therefore had a younger population, higher demographic indices (Karachurina 2006) and developed agriculture (see Nefedova 2003).

[16] For example, in the Central Federal District the share of the rural population living more than 300 kilometres from the regional centre in 1989 was less than three per cent, while in Siberia it was 33 per cent.

[17] Excluding Chechnya, Ingushetia, Dagestan and Kabardino-Balkaria.

[18] With administrative–territorial unit changes.

Table 4
Change in rural population in Federal Districts, by distance from regional centre, gain/decrease in %

	Centre	1st range	2nd range	3rd range	4th range	5th + range
			2002 in % to 1989			
Total average	**2.7**	**-4.9**	**-7.3**	**-7.4**	**-7.2**	**-7.4**
Central	-3.7	-7.3	-10.8	-13.1	-13.2	-9.8
North-western	-2.3	-9.0	-13.1	-14.8	-15.0	-15.4
South	14.2	8.2	7.4	10.1	7.3	-1.9
Volga	0.4	-3.8	-6.9	-6.0	-5.1	-5.4
Ural	1.7	-2.0	-8.1	-13.0	-13.6	-6.7
Siberian	8.5	-6.3	-8.8	-11.6	-10.1	-8.0
Far Eastern	-2.9	-23.7	-23.7	-25.9	-24.2	-30.1
			2010 in % to 2002			
Total average	**4.5**	**-6.4**	**-9.2**	**-10.4**	**-11.1**	**-12.3**
Central,	0.9	-5.2	-9.0	-12.0	-12.6	-13.1
North-western	4.4	-11.7	-18.6	-19.3	-20.1	-23.9
South	6.4	-2.3	-2.1	-0.4	-4.6	-7.3
Volga	5.8	-7.7	-8.9	-11.7	-10.8	-11.7
Ural	0.7	-6.9	-12.4	-14.4	-17.2	-12.1
Siberian	13.2	-7.0	-12.1	-14.5	-12.5	-14.5
Far Eastern	-0.7	-8.1	-13.6	-13.7	-14.4	-13.8

According to these data, 4.7 million rural inhabitants moved to regional centres in 2010. Proximity to the regional city prevented migration and even attracted people. This closeness allowed people to benefit from a mixed rural–urban lifestyle (e.g. working in the regional city yet cultivating household plots in the suburbs). Such a lifestyle, specific to Russian people formed during the systemic economic crisis of the 1990s. It has been described by Nefedova (2003) and her collaborators (Trejvish and Nefedova, 2002). At the same time, losses of rural populations in distant peripheries exceeded ten per cent in 2000–2010 almost everywhere else.

INTERNAL MIGRATION AS A FACTOR DEFINING THE POPULATION DYNAMICS OF LOCAL ATUS

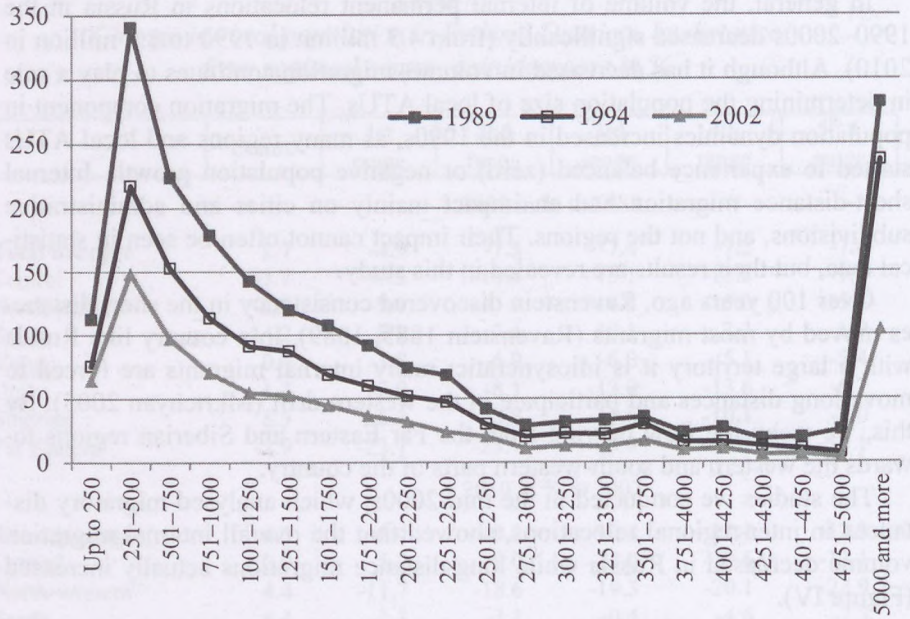
The factors that change the population dynamics of ATUs are mainly social and economic in character. Migration is a process that is sensitive to changes taking place in the economy and society. Thus, migration is the mechanism determining whether population is lost in one ATU or gained in another.

In general, the volume of internal permanent relocations in Russia in the 1990–2000s decreased significantly (from 4.3 million in 1990 to 1.8 million in 2010). Although it has decreased in volume, migration continues to play a role in determining the population size of local ATUs. The migration component in population dynamics increased in the 1990s, as many regions and local ATUs started to experience balanced (zero) or negative population growth. Internal short-distance migration had an impact mainly on cities and administrative subdivisions, and not the regions. Their impact cannot often be seen in statistical data, but their results are revealed in this study.

Over 100 years ago, Ravenstein discovered consistency in the short distances moved by most migrants (Ravenstein 1885, 1889). In a country like Russia with a large territory it is idiosyncratic: many internal migrants are forced to move long distances and participate in the western drift (Mkrtchyan 2005). By this, we mean the flow moving from the Far Eastern and Siberian regions towards the western and south-western parts of the country.

The studies we conducted in the mid-2000s, which analysed migratory distances in inter-regional relocations, showed that the overall internal migration volume decreased in Russia while long-distance migrations actually increased (Figure IV).

It may seem that the above-mentioned research does not relate to the subject of our study, the interaction between regional centres and the periphery. However, when a person living in the Eastern part of Russia decides to migrate he or she faces a dilemma: whether to relocate to the regional centre or to the West of the country; in fact, many decide to go to the European parts of Russia. According to our estimates, in 1990 24 per cent of all migrants from Siberian and Far Eastern Federal Districts moved to the Federal Districts located in the European part of Russia and in 2010 it stood at 21 per cent. The peripheral population in these Federal Districts was declining faster because it was affected by western drift and people were leaving to regional centres and the West of the country. Regional centres could not compete with the West and received a smaller inflow of migrants. As a result, even big cities in the eastern regions often lacked strong migration inflows from their peripheries. Only the most successful of them, like Novosibirsk, Krasnoyarsk and Irkutsk, attracted migrants.



Source: Mkrtchyan and Karachurina 2004.

Figure IV

Distribution of immigrants by zones of distance, hundreds of thousands of people, all of Russia, 1989, 1994 and 2002

At the other extreme, both centres and peripheries of the Western part of Russia received additional 'feeding' by migrants from the East of the country. This process contributed to muting all sharp centre–periphery contrasts. This was particularly relevant in the 1990s, when western drift was stronger and the migrants from the East of Russia were settling down extensively in the periphery, since big cities lacked jobs and the cost of housing was high.

CONCLUSIONS

Differences in the development of the centres and peripheries in Russia today manifest in many ways, including the dynamics of the population, population age structure, fertility and characteristics of mortality. In a situation where one sees general depopulation as the defining characteristic, opportunities for growth only exist in certain areas – often regional centres – as these are increasingly the most dynamic and therefore the most attractive cities. A key factor in the replenishment of their populations is migration from the periphery.

Specifically, we can conclude that:

1. The assumption that decline in population increases with increased distance from the centre is confirmed. At the same time the most significant gradient is observed from the centre to the administrative units of the 1st and 2nd range of distance. The fall in population between the 2nd and up to the 5th range of distance is insignificant. That means that the population dynamics of the 2nd to 5th ranges is negative and almost identical.

2. The hypothesis that the territories located close to the regional centres (30–50 kilometres) are not subject to population outflow is partially proved. Our calculations show that the most dramatic decline in the population occurs at very near distance (up to 30–50 kilometres) from the regional centre and at the greatest distance from the regional centres (over 500 kilometres). The periphery located between 200 and 500 kilometres from the centre is characterised by attraction of its own population to their respective centres. In the most distant areas, which exist only in the large regions of Siberia and the Far East, negative dynamics are associated with migration from the periphery in the direction of 'their' regional centre, and to an even greater extent to other western regions of Russia. Here, the influence of the western drift may be observed, rather than outflow of population from periphery to centre.

3. The attractiveness of the largest centres (with more than 100,000 inhabitants) increased in the 2000s in comparison with the 1990s. Despite a tendency towards natural demographic decline, these centres have shown stable growth in the last decade.

4. In some Federal Districts, such as Volga and Southern, the centres of ATUs are characterised by stable population growth, and this tendency is not related to their distance from the regional centre.

5. The tested core–periphery model is more pronounced in the period 2003–2010. In the 2000s the dynamics of regional centres became more positive than in the 1990s. This means that in the second period, under conditions of depopulation, the centres became stronger due to migration from the periphery and external migration.

6. The factors affecting centre–periphery relations in different regions depend on the arrangement of population settlements, the stage of demographic transition of the local population, the development of social infrastructure, connections between territories (for example whether a developed transport system exists) and economic factors (such as the industrial sector or investment climate). Core–periphery tendencies sometimes do not work as expected at a distance of 150–200 km. Specific reasons for this differ in each case, but ultimately relate to the centres of gravity of a second rank located at these distances.

7. In general, the larger the city the greater its capacity under conditions of depopulation to maintain or increase its population, regardless of the position of the centre or the periphery of that region. During the period under review, rural

areas showed a constant trend: villages closest to the centres experienced an increase, and in villages more than 300 kilometres from the centre the population declined by an average of 12–13 per cent for each inter-census period.

As mentioned above, there is inter-dependence between the population dynamics of the local ATUs and their distance from regional capitals in most but not all cases. In 1989–2002 the strongest contrasts between core and periphery were visible in the Central, North-western and Siberian Federal Districts. Their regional peripheries were most strongly subject to depopulation, the consequences of which were not mitigated even by the inflow of population from CIS countries.

Regional centres are therefore so strong that they spread their influence of attraction over a considerable distance; this also applies to the federal cities of Moscow and St. Petersburg, which are not included in this study. In addition, in the Central Federal District there are few poles of attraction of the second order (cities with a population more than 100,000). In other words, in the intraregional semi-periphery, back-up centres of gravity are weak or absent. In the next inter-census period (2003–2010) the core–periphery gradient amplified and spread to practically all territories of the country, and inter-regional contrasts became even less apparent than intraregional ones.

In 1989–2002 in Siberia (especially in the Far Eastern Federal District) and the Nordic part of the North-western Federal District, the all-country migratory trend of western drift prevailed, as well as a migratory outflow from these regions. Intra-country migration, rather than natural decline of the population, served as the principal component of negative dynamics of the population for all types of ATUs. In the following inter-census period, migratory outflow from these regions reduced, but negative demographic tendencies amplified.

The periphery only appeared viable in the Southern and Volga Federal Districts. In the 1990s, stabilisation and even a small growth in the population was apparent, with a better demographic structure of the agricultural population and positive indices of natural population movement. The inflow of migrants from other post-Soviet countries in the 1990s influenced population dynamics considerably. In the 2000s, the population of the peripheral ATUs began to decline. In the remaining regions, the population of peripheral regions for the whole period under consideration fell faster than the central regions, which led to the internal regional polarisation of population and the activation of centripetal tendencies. In spite of this the basic tested hypothesis, that depopulation increases with increased distance from regional centres, appears only partially valid. There are several other factors which contribute to infringement of the core–periphery model. In particular, exchange with CIS countries, especially during the inter-census period 1989–2002 was considerable and spread differentially across Russia. A considerable part of this migration inflow occurred in

the countryside (which during these years had 37 per cent net migration). This is a result of improved possibilities for returning Russian migrants to purchase affordable housing. In addition, government policy at the time encouraged return migration to rural areas. In the latest inter-census period (2003–2010), the official migratory increase was lower than in the 1990s, and also more city-oriented.

The contrast in population dynamics between the centre and the periphery increased during the period under consideration. The migratory attractiveness of regional centres contributed to population decline of the regional periphery.

- The huge distances and the sparse settlement structure, referred to in many papers analysing social and economic dynamics (Grizaj, Ioff and Trejvish 1991; Zubarevich 2003; Rodoman 2001) make it impossible to develop "ideal" core–peripheral gradients. The horizontal coherence of territory in Russia is low. The periphery of one region interacts extremely weakly with the periphery of another, and the force of their coherence actually declined during the transition period.
- The qualitative characteristics of the population in the periphery are distinctive, for example consisting of older and less educated people who accept the way of life of the distant provinces. Their lifestyle depends on the potato crop or having a farmstead of their own, and this to some extent determines their low migratory mobility.

In the years under study, the social and economic situation in the vast majority of cases was negative (Zubarevich 2003), opportunities in the labour market were limited, and production efficiency poor.[19] Stagnation has been encouraged through the poor development of regional infrastructure. The migration of youth (aged 17–25) is extremely limited, because their number is very low. This has restricted the chances of internal migration influencing changes in population in the peripheral regions.

Finally, it is worth mentioning that the impact of internal regional differences on population dynamics (and its components) in some ATUs is not weaker than between regions. Heightened core–periphery differences in the 2000s, compared to the 1990s, led to an increase in the concentration of population in some centres and regions. As a result, the inhabited populated space is shrinking.

[19] Gonchar (2010) suggests that in Russia average productivity per employed person decreases as the settlement size decreases. However, this effect is not so bad as to stimulate the mass migration of a population whose mentality is half rural and half urban.

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