

STEMMING THE TIDE

Denomination and religiousness in the Dutch fertility transition (1845-1945)

1. INTRODUCTION

Since the sixteenth century, The Netherlands have been the home of very divergent religious groups, ranging from Catholics and Calvinists to Lutherans, Jews and Anabaptists. The relationship between this religious variety and demographic patterns, both regional and temporal, has attracted a lot of scholarly attention. The discussions centered around three questions: First, to what extent can local and regional differentiation in marital fertility be ascribed to religion? Second, can the slow decline of fertility in the late nineteenth and early twentieth centuries in the south and east of the country be attributed to Catholicism? And third: why did The Netherlands have an overall high marital fertility rate compared with other countries until well into the twentieth century?

Until the advent of advanced statistical techniques, the first question was difficult to answer given the fact that regional differences in the economic structure ran parallel with those in religion. The urbanized and commercialized areas roughly overlapped with the Protestant parts of the country, whereas the region with self-sufficient agriculture was predominantly Catholic (cf Van Heek 1956; Buissink 1971; Hofstee 1981). Controlling for variables such as mortality, migration and population density, Boonstra and Van der Woude (1984) demonstrated that religion explains a large amount of local variation in marital fertility (1850-1890). Using twentieth-century census data at a low level of aggregation, Van Poppel (1983) was able to assess separately the effects of region, occupation of the husband and religion on the average number of children per marriage. In his opinion, the combination of familial forms of production and Catholicism accounts for most of the regional differences in fertility.

The researchers were less confident that religion was the prime cause of differences in the *pace* of fertility decline. According to Boonstra and Van der Woude (1984), religion could not explain local changes in fertility, at least not before 1890. Both Hillebrand (1991) for the provinces of Utrecht and Groningen

and Engelen (1987) for the province of Limburg concluded that economic changes were foremost in changing the motivation of people to adopt fertility control. However, “traditional” religions (Catholicism and Calvinism) acted as a “filter” delaying the acceptance of birth control. This filter was eroded earlier in cities than in the countryside. In addition, however, they pointed at regional mentalities – for which dialects were used as proxies – that seemed to exert an autonomous influence (Engelen and Hillebrand 1986).

Depending on the statistical definition chosen, the fertility transition in The Netherlands started either in the 1880s or in the late 1890s.¹ At the onset of the transition, the level of Dutch fertility was among the highest in Europe (Knodel and van de Walle 1986: 394). Furthermore, the pace of decline was slow and accelerated only from 1930 onwards. Thus, in 1960, the country was still characterized by high fertility, surpassed only by Ireland, Portugal and Spain (Coale and Treadway 1986: 39).

According to Lesthaeghe and Wilson (1986), religious mobilization against secularizing tendencies may have contributed to the relatively slow demographic “modernization” in some countries. In The Netherlands, Orthodox religions were rapidly gaining strength and societal impact in the second half of the nineteenth century. The combative spirit of the Catholic minority was fuelled by their emancipation to full civil rights (1798) and in particular by the restoration of the clerical hierarchy (1853). From the 1850s onwards, the number of specific Catholic associations and institutions, such as schools, increased rapidly. On the Protestant side, the Orthodox were similarly building their own organizations. In the decades to follow, both groups intensified their efforts to improve national morality through education, poor relief and lay organizations (Righart 1988). The competition between Catholic, Orthodox and more liberal groups was intense. From the 1880s onwards, Dutch society gradually became “pillarized”. Pillarization means compartmentalization on an ideological basis: pillars strive toward autarky by providing their members with all possible services, from cradle to grave: unions, insurance, banking, mass media, schools, hospitals, old people’s homes, youth and adult movements, as well as a political party (Billiet 1997). The essential elements in the building of group identity among the Orthodox Protestants and Catholics were family values and sexual purity.

There seems to be a consensus that religion, in particular through the emerging minority churches of Catholics and Orthodox secessionists, slowed down the adoption of deliberate fertility control in The Netherlands. But it is not clear precisely what aspects of religion were relevant. Most Dutch studies on the subject concentrate on the three largest denominations: Dutch Reformed, Roman Catholics and “Calvinist” *Gereformeerden* (see below). Other religions

are generally assembled in a single group. The highest fertility is always found among the Catholics and *Gereformeerden*, for which their “traditional” stance against family limitation is held responsible. However, there is a danger of tautological reasoning here. One lacks clear hypotheses on why belonging to particular churches would have an effect on fertility. Building on Goldscheider’s work (1971, 1999), McQuillan (2004) recently surveyed when and how religion can have an impact on fertility. In his opinion, essential conditions have to be met on the distinct levels of religious ideology, church organization, and individual motivation. The next section uses his discussion as a guide to build hypotheses on how denominations could influence fertility in The Netherlands.

A more specific problem of research on the subject is that the single largest church in The Netherlands, the Dutch Reformed (54.5 per cent of the population in 1879) tends to be described as an “intermediate” group with moderate fertility. Clearly, this is a statistical artifact due to researchers’ incapability of making a distinction between the very different subdivisions within the Dutch Reformed Church. Instead of being “moderate”, this church actually consisted of very outspoken liberal and orthodox streams. In this contribution, we will make more fine-tuned distinctions and use them in the fertility analyses.

To date, most empirical studies have analyzed fertility levels without discriminating between the behavioral components that determine the number of children eventually born within marriage. This paper starts off from the distinction between starting, spacing and stopping to analyze the underlying dimensions of fertility differences between religious groups. We then concentrate on the behavioral innovation that shaped the fertility transition, i.e. parity-aimed stopping behavior.

The impact of religion on stopping behavior has seldom been studied at the micro-level of individuals. Even rarer are multivariate approaches to the study of individual fertility. It is our view that only in this way can a clear distinction be made between the host of factors that influence fertility. These factors range from biological (age of the mother, postpartum infecundity) to economic (occupation of husband) and cultural ones such as religion. In this paper we will analyze the fertility reconstructions of 1272 individual couples from the central and south-western part of The Netherlands. Apart from the availability of data these regions have the advantage of not being dominated by a single denomination. However, this does not mean that they are representative of all parts of The Netherlands.

Dutch historiography has recognized the importance of religion in explaining the late and slow decline of fertility. However, the causal relationships have not

been elaborated satisfactorily and have at best been analyzed at the aggregate level of municipalities. In this contribution, we aim to hypothesize the religious influence of fertility with respect to doctrines and values, institutions and personal identification. Furthermore, we investigate the religious impact on starting, spacing and stopping. By using individual data and multivariate regression, we can bypass many of the problems that have beset earlier researchers. Thus, we hope to answer our central question: what aspects of religion were primarily responsible for delaying the fertility decline in The Netherlands?

The next section introduces the Dutch denominations and describes the ideology (doctrines and values) that may have influenced fertility. We also look at the institutional means at their disposal. Finally, we discuss individual identification with the church, its beliefs and values. To what extent can we actually measure religiousness in the past at the individual level? Does religiousness have more explanatory value than denomination? In the third section, we describe the family reconstitutions that we have employed. In the fourth section, we answer the question whether differences between religious groups were due to differential starting, spacing, or stopping, or to some combination of these behaviors. Our question in the final section is: what are the differences between religious groups after controlling for their socio-economic characteristics? And what can we say about the importance of religiousness, apart from the effect of self-declared denomination?

2. RELIGIOUS BELIEFS AND REPRODUCTIVE BEHAVIOR

In his survey of when and how religion influences fertility, McQuillan (2004) distinguished three necessary conditions, pertaining to ideology, organization, and identification, respectively:

1. the religion must articulate values and norms that somehow, directly or indirectly, manifestly or latently, affect any of the proximate determinants of fertility;
2. it must possess the means to communicate these norms to its members and to enforce compliance;
3. members must feel a sense of attachment to the religious community.

None of these conditions is sufficient on its own, while the stronger they all apply, the stronger the expected impact on fertility. With the three conditions as a guide, we now categorize the major denominations represented in The Netherlands and discuss their possible impact on fertility.

2.1. Ideology

To what extent did a particular religion develop specific norms regarding sexuality and procreation? For instance, were children seen as a gift from God and was one supposed to take the call to “be fruitful and multiply” literally? We also need to pay attention to more general values that may have an indirect effect. These values relate to the perception of marriage, to the importance of families and children and to the roles that women were supposed to adopt within society. Considering all these points, Roman Catholicism in The Netherlands stimulated high fertility among the flock. The Catholic Church reacted against “neo-Malthusian” propaganda for birth control by emphasizing its norms regarding marriage and reproduction. Intercourse without the intention of procreation was declared sinful, and family size limitation was strictly forbidden (Schoonheim 2005). Lay organizations, such as the RC Union for Large Families (1918) agitated against the availability of contraceptives. But more general values were of importance as well. From the second half of the nineteenth century, the clergy was actively seeking to improve the morality of the believers. For instance, women were supposed to hide their bodily forms as much as possible. Lacing of the breasts may have stunted them, resulting in a reduced capacity for breastfeeding. According to some authors, the clergy even explicitly discouraged breastfeeding (Meurkens 1985). The lower incidence of breastfeeding can explain the relatively high infant mortality often found among Catholics (Van Poppel, Schellekens and Liefbroer 2002). In addition, it may have stimulated fertility even more. From the 1870s onwards, the “Brotherhood of the Holy Family” devoted to improving catholic morality and family life gained a mass adherence (Righart 1988: 203). Couples were reminded that the sole purpose of marriage was procreation and that it was sinful to deny each other sexual gratification (the “marital debt”) (Flandrin 1970; Schoonheim 2005: 214, 218).

The largest Protestant group, the Dutch Reformed, stems from the Calvinist brand of the Reformation. In the seventeenth century, they advocated a rather strict interpretation of the Bible and professed a strong belief in predestination. Their view on marriage was different from the Catholic one: Protestantism emphasized mutual support between the spouses, whereas in Catholicism, the prime function of marriage was procreation (Van Poppel 1985; McQuillan 1999). In the late eighteenth and nineteenth centuries, the leading circles were influenced by Enlightenment ideas. “Modernist” theology tried to reconcile scientific insights and rationality with religion. Literal interpretation of the Bible, predestination, and the Resurrection of Christ were discarded and replaced by an optimistic belief in human reason, that was seen as a manifestation of divinity (Cossee 2001). In the late nineteenth century, the

“modernists” organized themselves in associations of *Vrijzinnig Hervormden* (Liberal Reformed). In 1920, almost 30 per cent of the Dutch Reformed ministers were Liberal (Knippenberg 1992:109). Somewhat less radical was the group of the “Ethicals”. They were receptive to new scientific insights, but did not reject the authority of the Bible. In 1920, 28.4 per cent of the ministers were affiliated with this group. The Liberal Reformed, and to a lesser extent the Ethicals, were inclined to grant the individual a large degree of autonomy in matters of family planning. In other words, the necessary “ideological” precondition for a religious effect on demography is not valid in their case.

Not surprisingly, the advance of rationalist and “modernist” theology met with increasing resistance from conservative elements in the Dutch Reformed Church. Led by discontented rural elites, secessions of Orthodox ministers and their followers took place in 1834 and in 1886. In 1892 these groups merged in the Reformed Church (*Gereformeerde Kerk*), but a remainder of the 1834 group continued as the Christian Reformed Church. Both churches were very clear in their doctrinal message: sexuality could only take place within marriage and only with the aim of procreation. This message was conveyed through youth organizations, journals, periodicals, etcetera. For instance, in an Encyclopedia (1925) specifically directed to the *Gereformeerde* audience, a lengthy article was devoted to Neo-Malthusianism. This article dismissed the economic reasons for limiting family size. In fact, education of the children was less effective in small families. When medical problems made it irresponsible to have more children, abstinence was the only solution. The point was that one put oneself in God’s place by using contraceptive devices. Ultimately, engendering life was “an act of the God of Life”. The lemma concluded by reminding the reader that “[something] that defiles shall not enter the new Jerusalem” (Grosheide et al 1925 IV: 342-344, our translation). By 1900, both Orthodox churches accounted for 13.6 per cent of Dutch Protestantism (Knippenberg 1992: 97).

However, there were many more Orthodox Protestants. A large Orthodox segment of the Dutch Reformed Church had chosen to remain within this church, which they held to be God’s own “planting” in The Netherlands. How could they maintain their position, given the dominance of Enlightenment theology? This was possible because of the very loose structure of the “People’s Church”. Although the Church had a set of doctrines (such as the Heidelberg Catechism), church discipline in doctrinal matters had been abandoned. In fact, restoration of this discipline was the main bone of contention during the nineteenth century. Also, the Dutch Reformed Church was highly democratic. Members elected the deacons and elders who formed the church council. The council in its turn called a minister to the parish whose preaching was deemed to match the conviction of the parish majority. In other words, Orthodox

congregations could go on as much as they liked. During the second half of the nineteenth century, they formed associations of their own. From 1864 onwards, the *Confessionele Vereeniging* (Confessionals) aimed at restoring doctrinal discipline. From their circle, an ultra-Orthodox group split off in 1895. This fundamentalist *Gereformeerde Bond* (Unionists) was to become the strongest bulwark of Orthodoxy in the twentieth century. Their communities were characterized by a strong geographic and mental isolation; leaving the village was discouraged, newcomers were mistrusted and scientifically-based innovations such as inoculation and chemical fertilizers were often rejected. In 1920, both groups accommodated 48 per cent of the Dutch Reformed.

Finally, a number of smaller Protestant groups deserve attention. The Anabaptist *Mennonites* had their roots in the Radical Reformation of the sixteenth century. Although consisting of very diverse sub-branches, the Mennonite Brotherhood was overall characterized by anti-authoritarianism, rationalism and a large emphasis on individual autonomy. As early as the eighteenth century, their growth was hampered by very low marital fertility (Knippenberg 1992: 53). The Mennonites were also highly receptive to new scientific insights. In 1800, two Mennonite ministers initiated the campaign against smallpox by having their own children inoculated. Even more “liberal” were the *Remonstrants*, who had seceded from the Dutch Reformed Church already in 1619 because they could not accept the doctrine that predestination overruled individual belief. In subsequent centuries, this groups of dissenters formed a haven for liberal Protestants from other churches. Mennonites and Remonstrants were quite modern in allocating responsible roles to women. For instance, the Mennonites had female deacons in charge of poor relief. In addition, these churches were the first to allow women to become priests (in 1905), on condition that they were not married. Lastly, the Lutheran Church, strongly associated with German and Scandinavian immigrants and their descendants, was by and large moderate in its doctrines, apart from a very small Orthodox secessionist group.

2.2. Institutions

As far as the churches held doctrines or values concerning demographic behavior, it is relevant to know whether they also had the means to communicate their messages to their followers and, if necessary, to ensure conformation. The Roman Catholics had an extensive array of institutions at their disposal. Their message was brought home through periodicals, schools and lay organizations. Even more impact had the system of confessions and absolution of sins. Also, priests made a point of remarking on (the need for) family extension during their

house calls (Bots and Noordman 1981; Schoonheim 2005, for a contrary opinion, see Somers and Van Poppel 2003). The *Gereformeerden* were probably even more successful in organizing their supporters and forging a sense of corporate identity. Their leader Abraham Kuyper, who created his own newspaper, political party and university, is considered the first modern mass-politician in Dutch history (Van Rooden 2002). In the *Gereformeerde* Churches, traditional systems of moral control were revived. Disciplinary measures ranged from admonition, prohibition to join the Lord's Supper, to public confession of sins and, if all else failed, expulsion from the congregation. In the Dutch Reformed Church these measures had already become obsolete in the first half of the nineteenth century. The liberals rejected them as "Calvinist drilling". Likewise, the Lutheran Church was lenient in matters of morality (Kemkes-Grottenthaler 2003: 718) Disciplinary measures such as the public shaming of pregnant brides seems to have secured high levels of conformity: Catholics and *Gereformeerden* had relatively low levels of prenuptial pregnancies (Kok 1990).

The Orthodox groups within the Dutch Reformed Church lacked the organizational drive of the secessionist Orthodox (Van Rooden 1996). In addition, they were remarkably ineffective in terms of moral discipline. This has everything to do with the pietistic character of these fundamentalist groups. Redemption is granted by divine grace, not earned by one's own belief or pious acts. Only a person himself knows whether he or she is redeemed and only then will he or she take part in the Lord's Supper. Thus, "avoidance" of communion is widespread in these circles. On the one hand, this belief requires a constant inspection of the state of one's soul. On the other hand, there is a overpowering emphasis on the sinfulness of the "world" and the "flesh". This situation creates, so to speak, an ethical vacuum: there are no clear behavioral rules and no clear control mechanisms, either from the side of the parents or from the church (Miedema 1989). One of the most embarrassing problems of the Dutch "Bible Belt" was (and still is) the unruly behavior of youths, in particular in the field of premarital sexuality (Drukker 1937; Kooy and Keuls 1967).

Both in terms of ideology and institutional practices, Dutch Protestantism displays a bewildering variety. For the sake of simplicity, we place the major groupings into a scheme based on McQuillan's first two criteria: the presence of doctrines or values stimulating high fertility and the presence of institutional means to communicate these (Figure 1). There is a clear distinction between groups with no or moderate doctrines regarding procreation and groups with outspoken doctrines and values. Along more or less the same line, the religious groups are divided by the strength of the organizations and control mechanisms.

For analytical purposes, we divide for the remainder of this paper the Christian groups in three: Roman Catholics, Liberal Protestants (Mennonites,

Remonstrants, *Liberal* Reformed, *Ethical* Reformed and Lutherans) and Orthodox Protestants (*Confessional* Reformed, *Unionist* Reformed, Christian Reformed and Reformed (*Gereformeerd*)).

Figure 1. Dutch religious groups by ideology and institutions

<i>Strength of institutions</i>	<i>Importance of values and norms regarding sexuality</i>		
	Low	Moderate	High
Low	Mennonites Remonstrants Dutch Reformed (<i>Liberals</i>)	Dutch Reformed (<i>Ethicals</i>) Lutherans	
Moderate			Dutch Reformed (<i>Confessionals</i>) Dutch Reformed (<i>Unionists</i>)
High			Christian Reformed (1834) Reformed (<i>Gereformeerd</i>) (1892) Roman Catholics

2.3. Identification and religiousness

According to McQuillan, for religion to have an impact on demographic behavior a third condition is necessary: individual believers need to identify with their church. In the period between roughly 1880 and 1960, the level of identification of most Christians with their church was extremely high and, in fact, unprecedented. Developments in this period have been described in terms of a cultural class-formation. The *Gereformeerde* leader Kuyper was not only successful in mobilizing and organizing the revolt of commoners against the Enlightened elites, his discourse came to be accepted by other groups as well. He claimed that the Dutch people had always consisted of three groups: Liberals, Orthodox Protestants and Catholics. In his view, the dominance of the liberals was unjustified and all groups should be free to run their own affairs. Indeed, the success of Protestant and Catholic political parties ensured that this vision was realized: state subsidies were directed to private confessional schools as well as to confessional broadcasting corporations. Dutch “pillarization” goes beyond McQuillan’s notion of the coincidence of religion and nationalism. The identity of the “imagined communities” of religious groups superseded national identity:

“What happened in effect was an ethnicization of religion. Religious identity involved membership of a group, and vice versa” (Van Rooden 2002). The attachment was strongest among the Roman Catholics and the *Gereformeerden*. For example, in the early 1960s 90 per cent of their members attended church several Sundays per month.

The level of religious identification (or religiousness) is very difficult to measure at an individual level. Often, a declared official denomination is too weak as an indicator of identification. Modern research has shown that religious schooling is a more powerful variable to predict demographic outcomes than denomination (Janssen and Hauser 1981). Also, Goldschneider and Mosher (1991) have successfully linked religiosity (indicated by church attendance and communion) with sexual behavior. Can we work with the concept of religiousness in historical populations?

Our family reconstitutions are derived from the population registers that registered individuals' religious affiliation. Indeed, in the population administration from 1850-1940 we find about 75 different abbreviations pertaining to different denominations. However, without a link to the records of the local churches, we do not know the *nature* of the affiliation. Was one a practicing member who had done a confirmation of the faith? Or was one a member only through baptism or even only in name, because one's parents had been members? The presence of members without any real attachment was particularly acute in the case of the large Dutch Reformed Church. Sometimes people only remained a member because deregistering entailed some cost and effort. Atheist activists were helpful in removing this final barrier by organizing collective deregistrations (Kruijt 1933). Apart from the nature of the membership, we would like to have detailed information on church attendance, religious schooling, etcetera. At the present stage of our research, this is not feasible.

We propose two measures to indicate a low individual level of religiousness: religiously mixed marriage and bridal pregnancy. First, churches have strongly discouraged mixed marriages, even among the Protestant groups (e.g. Grosheide et al. 1925 II: 271-273). During the heyday of pillarization (1935-1955) the intensity of mixed marriages was the lowest in Dutch history. For instance, in 1947 only about 5 per cent of Catholics had a mixed first marriage (Hondius 2001: 59). It is interesting to note that in mixed marriages the mothers were more important in determining the religion of the children than the fathers, even though the latter had the legal right to decide on this issue (Van Leeuwen 1959). From the 1920s onward, however, the children were often registered as non-denominational. Mixed marriages have often been associated with a low level of religiosity by contemporaries (Sanders 1931; Kruyt 1933). According to some

authors, the indifference to religious prescriptions can explain the remarkably low marital fertility of mixed couples (Van Leeuwen 1959). Others, however, have warned that the evidence of low fertility may be faulty (due to an overrepresentation of mixed couples among marriages that were not yet completed) (Dekker 1965).

Premarital sexuality can be interpreted as a flouting of the Church's emphasis on official marriage as the only legitimate basis for sexuality. Although for Protestants marriage was not a Sacrament, the doctrine was that a couple could only be brought together through God's own servants: the ministers (Schippers 1955). Without marriage, sexuality is nothing less than fornication. Bridal pregnancies can be interpreted as a low internalization of these rules as well as an indication of low (church) control on adolescent behavior (Hardy 2001). However, as an indicator of infidelity bridal pregnancy is probably only useful in the case of the Roman Catholics. As we have seen, in Protestantism strong pietistic beliefs could go along with very high levels of "enforced marriages".

Contemporary studies of secularization noted the strong decline in religiousness in cities. Catholic statistics on the Easter duties revealed the greatest negligence in the city of Utrecht. Among the Dutch Reformed as well as the Gereformeerden in Amsterdam and Rotterdam, attendance of services and doing confirmation were much less intense than elsewhere. Kruyt (1933) listed several reasons for this phenomenon. In the countryside, church attendance was often part of communal traditions (in several villages people went to church in procession) and embedded in intense social control. The more isolated the villages, the longer this situation could continue. Migrants to cities did not feel "at home" in church and would often cease going altogether. Cities were also places where people with divergent backgrounds and beliefs intermingled. To avoid conflicts, the topic of religion tended to be avoided in social encounters. Finally, the apparatus of the church had not kept pace with the growth of the cities (Schoonheim 2005: 101). For ministers and elders it was impossible to make personal acquaintance with all the members. In addition, people were often "lost" due to frequent removals.

2.4. Hypotheses

Our discussion of the doctrines and institutions of the various churches and the religiousness of their members can be summed up in a number of hypotheses regarding demographic behavior. We expect Catholics and Orthodox Protestants to have the highest marital fertility. A combination of factors works in that direction. With respect to birth spacing, the Catholics' low incidence of breastfeeding and the norm of the "marital debt" may have been a pressure

towards shorter birth intervals. Orthodox Protestants as well as Catholics had pronatalist doctrines, high internal social control, a fatalistic attitude towards life and low receptiveness of new, scientific knowledge. This would hinder the acceptance of any form of birth control, and of stopping behavior in particular. In contrast, liberal Protestant couples were probably more willing to experiment with birth control. We expect the same inclination to adopt new forms of birth control among couples showing little religiousness: mixed marriages as well as Catholic couples that already expected a child before the wedding date.

Our empirical analysis is limited to the fertility patterns of the Christian groups in the sample populations. For other groups, such as Jews and atheists, the number of observations is too low. We will first describe where the differences were, if any, in starting, spacing, or stopping, or in some combination of these. Then we fit a multivariate model in order to assess how religion and religiousness hindered or facilitated the adoption of stopping behavior as an innovative way to limit fertility. Because we expect that the institutional mechanisms of both Catholics and the Orthodox were more effective in rural places than in cities, we make separate analyses of the influence of religion for urban and rural areas.

3. CONTEXT AND DATA

In this article we analyze family reconstructions from the province of Utrecht and the port city of Rotterdam, The Netherlands in the period 1845-1945. Utrecht is a small province located in the central part of the country. The rural economy was based largely on dairy farming which grew continuously in importance. Farms were small in size and workforce but highly oriented towards producing quality products for export characterized agriculture. From around 1850 onwards, chemical, textile and cigar making industries were founded. However, the most important impetus for the economy came from Utrecht's central location at the nexus of Dutch railway lines. This attracted railroad offices and workshops, metallurgical industries and a host of commercial service companies. Due to the commercialized and specialized character of the Utrecht economy, most people depended on wages. The labor market was clearly divided in a skilled and an unskilled segment. Up until the latter decades of the nineteenth century, there were large numbers of unskilled day-laborers whose income was highly insecure and who often turned to charity to supplement their incomes.

Rotterdam is one of the few nineteenth-century boom-towns in The Netherlands. The city is conveniently located in the area where the large rivers, coming from Belgium and Germany, reach the North Sea. Rotterdam had always

been an important harbor, but in the second half of the nineteenth century it profited enormously from the German Unification and the rise of Germany as an industrial superpower. The waterways and harbors of Rotterdam, where bulk goods were transshipped, were constantly improved to keep up with the increasing flow of products to and from Germany. In Rotterdam, related services formed the largest share of total employment. Their share increased from 34.8 per cent in 1849 to 45.5 per cent in 1909. Trade and transport offered jobs to constantly increasing numbers of Rotterdam men: from 11,000 in 1849 to more than 70,000 in 1909. Between 30 and 40 per cent of the employed in the commercial services were dock laborers. In the twentieth century the demand for dock labor declined, due to mechanization.

In Utrecht province and Rotterdam we find the major religious groupings of The Netherlands represented. Southern Utrecht and the polders to the east of Rotterdam are part of the ‘Bible Belt’, the regional concentration of ultra-Orthodox Protestants in the central Netherlands. As we have described above, a large number of these fundamentalists are registered as Dutch Reformed and therefore undistinguishable from other, much more liberal Dutch Reformed. However, the religious orientation of the church *ministers* is known for the year 1920 (Beekink et al. 2003). For instance, in 33 southern Utrecht municipalities, all ministers belonged to the Orthodox *Confessionals* or *Unionists*. Since communities chose their own ministers, it is likely that they were already Orthodox in the second half of the nineteenth century. We have assumed that a Dutch Reformed individual was Orthodox, when he or she was born in a municipality where all ministers were associated with an Orthodox organization.

Our dataset is drawn from the Historical Sample of The Netherlands, a large database that is scheduled to contain more than 70,000 life courses. The database is built from a random sample (0.5 per cent) from the Dutch birth certificates of 1812-1922, linking and entering all information in both the civil registers (birth, marriage and death certificates) and the continuous population registers (Mandemakers 2000). Thus, complete life courses were reconstructed by following them in all their successive places of residence. From 1850 onwards, Dutch population registers recorded all life events (birth, death, marriage and migration) of individuals within their households, and noted additional information on occupation and religion. We have used the first, more or less completed, parts of this database. We limit the analysis to the first marriages of self-declared Christian sample persons (608 born in the province of Utrecht and 664 born in the city of Rotterdam). In our analysis, we will compare marital fertility in rural and urban contexts. We define a context as urban when a (first) child was born in a municipality of more than 10,000 inhabitants.

4. STARTING, SPACING, AND STOPPING

McDonald (1984) has proposed a simple formula to describe completed marital fertility. Starting from the fact that the average completed fertility of a group of ever-married women is a function of their starting, stopping and spacing behavior, he proposed the following equation as a tool to distinguish between the different components:

$$CEB = s \cdot \left(1 + \frac{l - m - f}{i} \right)$$

The mean number of children ever born (CEB) is a function of:

- s = the proportion of the group who have at least one child;
- l = the mean age at last birth of the wife;
- m = the mean age at marriage among women who ever have a birth;
- f = the mean length of the interval between marriage and first birth;
- i = the mean length of interbirth intervals (McDonald 1984: 25).

The purpose of the formula is to show what proportion of an observed change in CEB is due to starting, spacing and stopping respectively. Starting is represented by m and f , spacing by i , and stopping by l .

We include only married couples with at least one child, which makes s equal to 1 in all cases. Table 1 gives the values calculated for the other parameters by cohort, place of residence, and religious group. We distinguish between two (maternal) birth cohorts. The first includes all couples with women born between 1815 and 1875. The second cohort (women born between 1876 and 1903) started their reproductive life when the fertility transition had become evident in The Netherlands (around 1890). We also separate between urban and rural places. Finally, as to religion, we distinguish between liberal Protestants, Orthodox Protestants, Catholics and mixed couples, as discussed in section 2.

First, the table indicates that the difference in completed fertility between Catholics and Orthodox Protestants on the one hand, and liberal Protestant and mixed couples on the other hand was relatively small in the first cohort. Differences became much bigger in the younger cohort. The lack of substantial differentiation in the first cohort is remarkable given the differences in age at marriage, particularly in the countryside. Here, liberal Protestants married markedly earlier than Catholics. However, the latter had relatively short birth intervals and also a somewhat higher mean age at last birth. The short birth intervals of the Catholics may be associated with both relatively high coital

Table 1. McDonald-parameters of starting, spacing, and stopping of couples (1845-1945) by birth cohort of the wife and religious group, The Netherlands, province of Utrecht and Rotterdam.

1815-1875	URBAN				RURAL			
	Liberal	Orthodox			Liberal	Orthodox		
	Protestants	Protestants	Catholics	Mixed	Protestants	Protestants	Catholics	Mixed
<i>m</i> (years)	25.61	27.84	25.71	25.21	24.37	25.50	27.36	26.96
<i>f</i> (months)	20.01	9.69	17.09	16.69	20.18	11.97	15.60	18.22
<i>i</i> (months)	27.29	27.51	27.10	28.19	27.96	26.27	25.90	28.27
<i>l</i> (years)	37.81	41.26	38.46	38.53	38.32	38.17	38.93	38.56
<i>CEB</i>	5.53	6.50	6.01	6.08	6.27	6.33	5.76	5.28
<i>N</i> (marriages)	116	6	67	52	30	42	66	39

1876-1903	URBAN				RURAL			
	Liberal	Orthodox			Liberal	Orthodox		
	Protestants	Protestants	Catholics	Mixed	Protestants	Protestants	Catholics	Mixed
<i>m</i> (years)	24.39	24.98	25.06	23.98	25.91	24.08	25.89	24.45
<i>f</i> (months)	19.22	12.61	13.88	21.34	16.61	16.28	13.17	10.57
<i>i</i> (months)	35.91	28.54	28.82	35.33	36.42	27.87	27.55	30.09
<i>l</i> (years)	32.30	35.66	34.05	32.79	34.56	35.46	37.99	34.62
<i>CEB</i>	3.11	5.05	4.26	3.39	3.39	5.31	5.79	4.70
<i>N</i> (marriages)	182	21	103	124	33	35	38	37

Source: Historical Sample of The Netherlands.

frequency (“marital debt”) and a low incidence of breastfeeding. Our earlier multivariate regressions on the birth intervals have shown that the short intervals of the Catholics stand out, even after controlling for other characteristics, such as the age of the mother, marriage duration, socio-economic position of the couple et cetera (Van Bavel and Kok 2004, 2005). To some extent, deliberate spacing took place already before the fertility transition, in particular during the first ten years of marriage. The intervals tended to increase when more children were surviving (Van Bavel and Kok 2005).

The differences in mean age at last birth are so small in the first cohort that they can easily be explained by the age at marriage and by differences in birth spacing. Under natural fertility conditions, both high age at marriage and short birth intervals are associated with a higher age at last birth (Okun 1995). In the second cohort, however, stopping became much more important. In this

generation, fertility had declined among all religious groups but it was lowest in the liberal and mixed groups. This was mainly due to the much lower age at birth of the last child. In the cities, strikingly earlyliberal Protestant and mixed marriages. Interestingly, the birth intervals increased in the second cohort among the liberal Protestants (both in urban and rural areas) and the mixed couples (in cities). This is probably caused by long final intervals, that can be interpreted as failed attempts to stop.

Rural Catholics married late in the oldest cohort, but made up for the difference by having shorter intervals and by continuing longer with child bearing. In the youngest cohort they still had a high age at last birth. Clearly, Catholics adopted birth control by early stopping only in the cities, in combination with (moderate) spacing. The Orthodox Protestants seemed to have adopted stopping only slightly, in cities as well as in the countryside. For urban women, the exceptionally high mean age at last birth in the oldest cohort cannot be considered to be very robust because of the small number of completed marriages in this group (N=6). Finally, the mixed marriages lowered their fertility to some extent by spacing but foremost by stopping. Interestingly, they have the same behavior in rural and urban contexts.

Summing up, mixed couples and liberal Protestants adopted birth control by means of early stopping both in cities and in the countryside, whereas Catholics only did so in the cities. However, McDonald's model does not tell us anything about the causes underlying the observed differences in mean birth intervals and ages at last birth. Were they due to deliberate spacing and stopping or were they the unintended consequence of other characteristics of the religious groups?

In order to shed more light on these questions, we need to proceed to multivariable regression. The next section analyzes stopping behavior in the second cohort of mothers, because the different pace of the fertility transition between the religious groups appears to have been predominantly due to early stopping. The question is whether this is confirmed in a regression analysis that controls for demographic and socio-economic variables.

5. LOGISTIC REGRESSION OF STOPPING

Stopping means that no more births occur after a previous one, which can be described as occurring with some probability. Therefore, it can be analyzed by means of a logistic regression model (Yamaguchi and Ferguson 1995; Van Bavel 2004). The dependent variable is whether or not at least one more child is born within five years after the previous child. The probability (p) of the dependent variable being a yes (stopping does occur) is expressed in terms of its *odds*, that is the probability of a "yes" divided by the probability of a "no" ($p/(1-p)$). The

regression coefficients are estimates of the effects of the independent variables on the natural logarithm of the odds. By exponentiating the regression coefficients, we obtain *odds ratios*. These indicate the increase in the odds of the dependent variable of being a yes resulting from an increase of one unit in the independent variable (Menard 1995). Here, we model the termination of childbearing as a function of natural and social-structural determinants as well as religious characteristics.

The observational units in our sample are birth intervals (either open or closed), not marriages. But, obviously, these birth intervals are nested within marriages. Some couples may be likely to continue childbearing at higher parities; others will be inclined to stop early. As a result, the probability of stopping after each birth interval depends on its marriage. Even after controlling for the marriage characteristics that feature in the list of covariates, the probability of stopping may differ for reasons unobserved. Therefore, the birth intervals cannot be considered to be independent observations. Ignoring this results in underestimated standard errors for the regression parameters and, hence, a higher risk of falsely rejecting the null-hypothesis. The solution is to add a random component to the logit model to capture the effects of unobserved heterogeneity on the family level (Kreft and de Leeuw 1998). This amounts to allowing every single marriage to have its own overall likelihood of stopping, independent of, and unexplained by, the covariates.

Our model includes three basic sets of covariates. A first set consists of determinants of stopping under natural fertility conditions (see Van Bavel 2004). Two very important predictors of natural stopping are the age of the wife and marriage duration. The former is highly associated with the onset of sterility, while the latter is negatively related to coital frequency. After controlling for these two variables, the fecundity of marriages still varies significantly. Couples characterized by high fecundity will have, on average, a higher cumulative number of births at any age and marriage duration. For these couples, the probability that the current interval is closed by yet another birth will also be relatively high. Therefore, we include the number of children ever born (CEB) within the current marriage at the start of the birth interval in order to control for natural fecundity differences.² The survival status of the previous child is also included in the model because infant mortality may interrupt breastfeeding and enhance the likelihood of an additional birth. The child survival variable is binary and set to one if the child dies within one year. In addition, this variable is set to one when a next child is conceived and the death of the previous child occurred before the conception (but still within a year).

The second set of covariates is included in order to control for the socio-economic situation of the family. Because the Dutch population registers provide

only very sparse and unreliable information on the economic activity of married women, we have to limit ourselves to the husband's occupations. The grouping of specific occupational titles has been derived from a classification often used in Dutch historical demography (Giele and Van Oenen 1974, 1976; see also the contribution of Schellekens and Van Poppel in this volume).

The final set of covariates is of central interest here. Based on the categorization in section 2 of religious denominations and our discussion of the relationship between religiousness and mixed marriages, we distinguish between the following groups: homogeneous (1) Catholic, (2) liberal Protestant, and (3) Orthodox Protestant marriages, (4) mixed Orthodox–liberal Protestant marriages, and (5) mixed Catholic–Protestant marriages. Within the latter group, we distinguish between (5a) marriages where the husband is Catholic and the wife Protestant (liberal or Orthodox), and (5b) marriages where the religious affiliations are reversed. We expect that mixed marriages will deviate from church norms more often than homogeneous marriages.

Finally, we include a binary variable indicating whether or not the wife was already at least for two months pregnant at the time of the wedding. However, as discussed in section 2, in Dutch Protestantism bridal pregnancy can hardly be seen as deviant behavior, because even strong pietistic beliefs could go along with very high levels of “enforced marriages”. Therefore, we include an interaction effect of bridal pregnancy with Catholicism of the couple. Bridal pregnancy was lower among Catholics and may therefore to some extent be read as deviant behavior possibly signaling low religiousness. Table 2 presents the percentage distributions of the variables included in the regression.

We fitted the multilevel logistic model to birth intervals from first-married women from our second cohort, born between 1876 and 1903. As explained above, we fitted separate models for urban and rural areas because we expect that the mechanisms of institutional control were more effective in villages than in cities. Table 3 gives the estimates. The effect parameters are reported in exponentiated form in order to make interpretation in terms of odds ratios easier.

Turning immediately to the effect of religious affiliation, there were significant differences between the denominations in rural areas. Homogeneously Catholic and, to a somewhat lesser extent, Orthodox Protestant couples clearly had a lower propensity to stop early than liberal Protestant couples, as expected. For example, in the countryside, the odds of stopping at a given age, parity and marriage duration was about half for the Orthodox compared to the liberal Protestants.

Interestingly, the stopping pattern of mixed Catholic–Protestant marriages was somewhere in between the both Catholic and both liberal Protestant positions. In all cases, the difference between the stopping of homogeneous

Table 2. Percentage distributions, or, means and standard deviations (between brackets) for characteristics of the birth intervals used in the model presented in Table 3.

Covariate	RURAL		URBAN	
Age of mother: 15-24	20.74	%	25.97	%
25-29	29.51		31.12	
30-34	24.44		24.16	
35-39	17.78		13.59	
40 and +	7.53		5.15	
Mean marriage duration	6.64	(5.40)	5.90	(5.16)
Previous child died	5.68	%	7.73	%
Mean CEB within marriage	3.89	(2.80)	3.24	(2.52)
Occupation of father				
- Unskilled worker	37.78	%	23.78	%
- Elite, professional	1.60		1.81	
- Farmer	17.78		1.75	
- Official & white collar	5.80		6.41	
- Shopkeeper or artisan	17.53		15.23	
- Skilled worker	19.26		49.59	
- Unknown	0.25		1.42	
Religion				
- Both Lib.Prot.(ref.)	15.68	%	39.67	%
- Both Roman Catholic	33.21		26.08	
- Man Cath., Woman Prot.	0.49		8.22	
- Man Prot., Woman Cath.	2.35		10.52	
- Both orthodox Protestant	28.40		5.42	
- Mixed Lib-Orth Protest.	19.88		10.08	
Sample file: Utrecht	94.94	%	23.62	%
Rotterdam	5.06		76.38	
Premarital pregnancy	29.51	%	32.00	%
Premar. Pregn. AND Catholic	4.81	%	5.15	%
N birth intervals	810		1825	

Source: Historical Sample of The Netherlands, Utrecht and Rotterdam sample.

marriages and mixed marriages was too small to be statistically significant. If the husband was Protestant and the wife Catholic, the behavior resembled rather more the Catholic pattern of late stopping. If the husband was a Catholic and the wife Protestant, the couple's stopping position was closer to the liberal Protestant early stopping. If the husband was Protestant and the wife Catholic, the timing of stopping resembled the Catholic pattern of late stopping. This suggests that a woman's religious background was more influential than her husband's in determining their fertility. Again, this holds true only for the countryside.

In the cities, the differences between religious groups were much smaller – if any: none of the observed differences are statistically significant, even if the number of observations is bigger than for the countryside. In urban areas, the estimated odds of stopping for Catholics were only 0.77 times lower than the odds for liberal Protestants. In the villages, this odds ratio was 0.34. The odds ratios for Orthodox compared to liberal Protestants were 0.70 in the cities and 0.49 in the villages. This finding supports the hypothesis that an important aspect of the influence of religion on the pace of the fertility transition was the ability of religious institutions to enforce compliance with their norms. As people could be more easily monitored in small villages than in cities, social control mechanisms could do their job more effectively there.

Premarital pregnancy may be read as a sign of rebellion against the teachings of the church in the Catholic, but not in the Protestant case. That is to say, Catholic brides who were pregnant at the time of their wedding were significantly more likely to adopt stopping behavior than Catholic brides who were not pregnant. There was no such significant difference between Protestant brides.

We now turn to the control variables. First, the age of the mother is positively related to the probability of stopping, as it should be. Marriage duration has an independent effect in the same direction, because it is negatively related to coital frequency. Survival of the previous child had no significant effect, which suggests that there was no deliberate replacement of deceased children. Finally, the effects of husband's occupation, if any, ran in the same direction in urban and rural areas. Officials and white collar workers were the keenest stoppers, while unskilled workers, shopkeepers and artisans were less likely to adopt early stopping. The elite professions were somewhere in between. In rural areas, farmers may have been more likely to stop than unskilled workers.

After controlling for all these covariates, the level of heterogeneity among first-married couples was much lower in rural than in urban areas: the estimated family-level variance was 0.43 for urban and only 0.18 in rural communities. This suggests that reproductive behavior was more homogeneous in the countryside and more heterogeneous in the cities, as might be expected. All

Table 3. Logistic regression of the probability that no more child is born within five years after the current birth, by rural vs. urban place of birth; birth intervals for first-married women born 1876-1903, Utrecht and Rotterdam sample

Covariate	RURAL			URBAN		
	<i>exp(coëf)</i>	<i>std(coëf)</i>	<i>p</i> ^(c)	<i>exp(coëf)</i>	<i>std(coëf)</i>	<i>p</i> ^(c)
Intercept	0.15	0.436	<.001	0.16	0.300	<.001
Age of mother (ref. = 15-24)	1.00	/	/	1.00	/	/
- 25-29	1.91	0.349	0.065	1.30	0.171	0.128
- 30-34	1.83	0.392	0.124	1.34	0.218	0.180
- 35-39	2.60	0.466	0.041	2.15	0.292	0.009
- 40 and +	9.36	0.599	<.001	14.81	0.477	<.0001
Marriage duration	1.58	0.064	<.001	1.36	0.034	<.001
Previous child died	1.09	0.425	0.838	0.75	0.233	0.214
CEB within marriage	0.49	0.107	<.001	0.60	0.064	<.0001
Occupation of father						
- Unskilled worker (ref.)	1.00	/	/	1.00	/	/
- Elite, professional	1.94	0.799	0.409	1.32	0.481	0.565
- Farmer	1.72	0.322	0.095	1.05	0.649	0.946
- Official & white collar	2.13	0.449	0.094	3.04	0.295	<.001
- Shopkeeper or artisan	1.03	0.326	0.935	1.08	0.224	0.718
- Skilled worker	1.43	0.301	0.237	1.41	0.171	0.043
- Unknown	/	/	/	0.47	0.621	0.223
Religion						
- Both Lib.Prot.(ref.)	1.00	/	/	1.00	/	/
- Both Roman Catholic	0.34	0.370	0.004	0.77	0.205	0.200
- Man Cath., Woman Prot.	0.55	1.441	0.675	0.84	0.254	0.503
- Man Prot., Woman Cath.	0.39	0.718	0.189	0.83	0.232	0.416
- Both Orthodox Protestant	0.49	0.335	0.033	0.70	0.323	0.268
- Mixed Lib-Orth Protest.	0.95	0.339	0.872	0.96	0.226	0.866
Locality (ref.=Utrecht)	1.00	/	/	1.00	/	/
Rotterdam file	2.08	0.448	0.104	2.44	0.189	<.001
Premarital pregnancy (ref.=no)	1.00	/	/	1.00	/	/
Premarital pregnancy	1.16	0.280	0.604	0.87	0.173	0.419
Premar. Pregn. AND Catholic	1.47	0.611	0.532	2.13	0.373	0.043
Marriage-level variance ^(*)	0.18	0.349	0.600	0.43	0.238	0.068
Df	22			22		
Chi square	222.4		<.0001	397.4		<.0001
Log-likelihood	-353.4			-991.45		
N birth intervals	810			1825		
N marriages	175			546		

(*) not exponentiated

(c) two-tailed t-test

Source: Historical Sample of The Netherlands, Utrecht and Rotterdam sample.

results presented here indicate relatively conformist reproductive behavior in the villages whereas the old saying that *Stadtluft macht frei* apparently held in the field of fertility control as well.

6. CONCLUSION

In the last decades of the nineteenth century, The Netherlands were characterized by a very high level of marital fertility. In addition, the pace of subsequent decline was rather moderate. To what extent was the Dutch version of Christianity responsible for both the remarkable level and development of fertility? In assessing the impact of religion, it proved useful to consider its diverse aspects. Firstly, the various Christian churches in The Netherlands had very different ideologies, ranging from liberal and rationalist to fundamentalist. Several denominations granted the individual autonomy in interpreting the faith, thus weakening the power of clergy and (moral) theology. This autonomy extended into rational decisions in family matters. Thus, for a large part of late nineteenth century Dutch Protestantism, there was no “religious” filter or barrier to family limitation, once the economic incentive was present. In the meantime, however, Orthodox Protestant and Catholic churches were developing anti-Neo-Malthusian and pro-family doctrines. Indeed, members of these denominations were the most reluctant to adopt stopping behaviour.

Apart from ideology, we have looked into the institutional means the churches had at their disposal. The Catholics and *Gereformeerde* Secessionist churches were able to enforce their message with means of communication on the one hand and discipline on the other. However, these means were not very effective in the context of a city. In the cities, their members turned out not to behave differently from others, whereas in the villages they did.

Denomination itself does not disclose the intensity of the individual attachment to the church or its doctrines. In establishing the separate impact of religiousness we have taken a closer look at religiously mixed marriages. We hypothesized that the very fact of a mixed marriages indicates a certain indifference to the churches’ prescription on the side of both partners. Indeed, mixed marriages were quite innovative in their fertility behaviour, both in urban and rural contexts. Interestingly, mixed marrying women not only determined the denomination of their children, but the “contraceptive style” of the couples as well. That is, a mixed couple resembled the Protestants more when the wife was a Protestant, and vice versa when she was a Catholic. Furthermore, we have looked at bridal pregnancy as an indicator of fidelity. Catholics who had transgressed the rules against premarital sexuality, were more inclined to employ “stopping” as well. At least, this was the case for urban Catholics.

The strong differences in the impact of religion between cities and villages, when all other factors are held constant, leads us to our conclusion that religion can only have a strong effect on demographic behaviour when possibilities for direct supervision and intense social control among the members can accompany clear directions as how they are to behave.

NOTES

¹ According to the definition of Princeton's European Fertility Project the Dutch fertility decline started in 1897, when a 10 per cent drop in the estimated I_g was measured (Knodel and van de Walle 1986: 394). I_g relates observed fertility to the 'maximum' level attained by Hutterite women, taking account of the age distribution of married women. However, the estimated Total Fertility Rate (average number of children per woman) dropped already in 1879. During the 1880's and 1890s, statisticians and doctors began to comment on the declining births rates (Van Poppel and Röling 2003).

² The problem can not be tackled by removing from the model the couples that stopped very early. Early stopping may have been deliberately planned, whereas, conversely, late stopping may have been caused by infecundity.

