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Doctoral Dissertations, 2011-2026

Sociology

2012

Population Problems? Demographic Knowledge and Fertility in Great Britain and France, 1945-2005

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Princeton, NJ : Princeton University

<http://arks.princeton.edu/ark:/88435/dsp01jh343s34t>

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POPULATION PROBLEMS?
Demographic Knowledge and Fertility in Great Britain and France,
1945-2005

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A DISSERTATION
PRESENTED TO THE FACULTY
OF PRINCETON UNIVERSITY
IN CANDIDACY FOR THE DEGREE
OF DOCTOR OF PHILOSOPHY

RECOMMENDED FOR ACCEPTANCE
BY THE DEPARTMENT OF
SOCIOLOGY

Adviser: Viviana Zelizer

September 2012

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ABSTRACT

Population size has been a matter of concern for rulers and states for centuries. Fears of over- and under-population led to extensive political debate and the implementation of numerous policies during the past century. Yet it is difficult to determine why demographic patterns like fertility rates sometimes command the attention of policymakers and the general public, and at other times disappear from public debate. This dissertation uses a multi-method comparative case study to investigate organizational and cultural factors that led to the development of sharply contrasting understandings of national fertility rates in two countries in the post-World War II twentieth century: strong concerns about fertility decline among French policymakers and publics, but a nearly complete lack of concern among their British counterparts, despite their strikingly similar national fertility rates. I focus on demographic experts as key actors shaping discussion of population trends during this period. By examining how demographic experts defined their disciplinary contributions, made projections for the demographic future, and constructed disciplinary research agendas, this study shows how cross-national differences created different roles for demographic experts in defining and addressing population “problems,” at the same time as they shaped demographers’ own definitions of these problems.

My analysis shows how demographers’ organizational locations and intellectual traditions shaped their contributions to three spheres for the production of policy-relevant demographic knowledge: state population commissions, national population projections, and academic publications in demography journals. I argue that the two countries’ different interpretations of similar fertility trends were shaped by cross-national differences in the institutional structures demographers inhabited, as well as their cultural traditions of thought about population change. Demographic experts’ contributions to public debate were mediated by

institutional configurations: in France, national institutional support gave them a prominent role in public debates and encouraged the study of French fertility. Combined with an intellectual tradition theorizing indefinite fertility decline, this led to a focus on low-fertility contexts. In Britain, however, the absence of national institutional support, combined with relatively strong support for the study of international population issues in high-fertility contexts, led demographers to focus on global population growth, rather than national decline. These different institutional and cultural frameworks profoundly shaped the trajectories of demographic understandings of population in Great Britain and France, leading to different concerns over the problem of population.

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ACKNOWLEDGEMENTS

This dissertation has benefited from the support and advice of many people. Their input has improved this project and made writing it a rewarding experience. My adviser, Viviana Zelizer, has provided great encouragement and guidance throughout graduate school. Back when I barely knew what sociology was, it was her work that drew me in and made it clear to me that this was what I wanted to do. She has provided invaluable support at key points, encouraging me to pursue the topic that really interested me despite the difficulties, and helping me down the long and winding road from “interests” to a dissertation. She has pushed me to not only tell a compelling story, but to consider its broader implications.

Paul DiMaggio’s constructive and challenging questions and suggestions have been a great help in clarifying and organizing my arguments. Throughout the research process, my work has benefited immensely from his thoughtful engagement with my arguments and evidence. Betsy Armstrong’s insightful comments have helped me to think about my research in broader historical perspective. She has also been a supportive adviser on matters academic and professional as I navigated graduate school. From the prospectus to the final draft, Sara McLanahan has encouraged me to clarify my claims and arguments, making both stronger.

My work has also benefited greatly from others who were not on my committee, but who were also generous with their time and expertise. King-To Yeung’s comments always pushed me to think harder about what was at stake in my arguments, and his enthusiastic engagement with graduate students, whether in informal reading groups or one-on-one discussions, made thinking about ideas exciting. I thank him and Kim Lane Scheppele for serving as dissertation examiners and providing helpful comments. Delia Baldassarri helped me learn to manage the infinite possibilities of inductive research. Martin Ruef was an invaluable source of methodological and

sociological wisdom. In my first semester of grad school, it was conversations with Miguel Centeno that first helped me to be excited about my own research ideas. I am also grateful to Josh Goldstein for his helpful advice and support, and for giving me a model of how to do demographic research with a sociological perspective. Thanks also to Tom Espenshade and Charlie Westoff for imparting their demographic wisdom.

I would also like to thank the scholars who helped me figure out the lay of the land on my research trips to France and Great Britain. During my time at Sciences Po, I was lucky enough to learn from discussions about French demography and family policy with Jeanne Fagnani, Hervé Le Bras, and Paul-André Rosental. I would also like to thank my hosts, the *Observatoire sociologique du changement* at Sciences Po, and the graduate students at the *Observatoire* for providing helpful perspectives on my research. I am also grateful for the important background information on the field of British demography that I received from John Hobcraft, who knew many of the principals.

This project could not have been completed without the hard work of excellent research assistants. I am grateful to Michael Franklin for going above and beyond the call of duty to provide programming assistance for the topic modeling analysis, and to Alize Arıcan and Murat Can for capable and conscientious assistance with transcriptions. Thanks also to Chong Wang for advice on topic models. Special thanks are due to Sean Gerrish for his generosity and talent in translating from his discipline to others—his guidance on the use of topic models was invaluable.

The research librarians at Princeton have been wonderful. Thanks particularly to Elana Broch and Joanne Donatiello for sharing their expertise. I feel very lucky to have been able to use the population library collection, where I got to read a copy of David Glass's *Population: Policies and Movements in Europe* with the inscription, "To Dr. A.J. Lotka. With sincere

regards. D.V. Glass. 8/viii/1940.” Thanks also to the History librarian, Elizabeth Bennett, for her expert navigation of resources for historical research.

The staff of the Sociology Department and the Office of Population Research has made it easy to focus on work. Thanks especially to Donna DeFrancisco, Cindy Gibson, Judie Miller, Lynne Johnson, Mary Lou Delaney, and Robin Piskecky for making everything administrative work so well, and for making everyday life so pleasant. Thanks to Eleidis Sierra and Lil Morgan for keeping the building running smoothly, and for providing good company in the wee hours of the morning.

I was fortunate to receive generous support for my research from the university. Research grants from the Office of Population Research and the Department of Sociology helped to fund my archival work, as did a fellowship from the Global Network on Inequality at the Princeton Institute for International and Regional Studies (PIIRS). Fellowships from PIIRS and the Fellowship of Woodrow Wilson Scholars allowed me to devote my final years to writing full-time. Thanks to John Darley and Mark Beissinger for making these programs into true communities of scholars, and to the other fellows for helpful comments on preliminary versions of Chapter 2 and Chapter 3. Chapter 2 was also presented at the American Sociological Association Annual Meetings in August 2011 and at the British Society for Population Studies (BSPS) Annual Meetings in September 2011. A version of Chapter 4 was presented as a poster at the BSPS meetings. Chapter 3 was presented at the Office of Population Research seminar series at Princeton University in April 2012, and at the Sociology seminar series at Koç University in February 2012.

I am very grateful to the amazing faculty from my undergraduate years at Pomona College, who made an academic career seem like a great thing to do. Thank you to Kevin Platt,

who encouraged me to pursue my interests (all the way to Siberia!) and was a wonderful and generous advisor. Thank you to Gary Wilder, who shared an intense devotion to ideas that mattered with a bunch of wide-eyed undergrads. And thank you to the Math Department, especially Shahriar Shahriari and Erica Flapin, for encouraging students like me, whose other interests could easily have taken over in a less hospitable math environment, to major in math.

Special thanks are due to Murat Güvenç, whose enthusiastic exposition on the thesis that Harrison White is the Copernicus of our time led (more directly than one might expect) to my decision to become a sociologist. I hope someday I will again be able to find his diagram explaining the methodology of correspondence analysis, drawn on the back of an empty box of gum.

My graduate school experience was infinitely more enlightening and productive (and also fun) due to the contributions of my fellow students. Two working groups—one face-to-face and one virtual—were crucial to my completion: thank you to LaTonya Trotter, Valerie Lewis, Liz Derickson, and Christina Jackson. Extra-special thanks to LaTonya for making those groups happen and for mutual support, from our days studying for the Demography general to now moving on to new places. Thank you to the old Monday-night dinner crew, including Danny Schneider, Amir Goldberg, and Gil-li Vardi. Thanks to the intellectual community provided by officemates and others throughout the years, especially Angelina Grigoryeva, Ed Berchick, Carol Ann MacGregor, Alex Murphy, Sofya Aptekar, Sharon Bzostek, and Debbie Becher.

My gratitude to Hana Shepherd bridges academic and personal spheres. Thank you for reminding me what's important about sociology, for telling me that I can do it, and for being WAY more fun than anyone who's such a good influence should be. Thank you to my friends outside of grad school who have helped me enjoy the rest of the world: Virginia Nguyen and

Brian Hashemi, Julia Stone, Ellie Harvill and Jacob Fenton, Lilya Sultanova, Ann Claire Tejtal, Shalini Roy, and Michaela Gulemetova (ok, some of you were in grad school, but you were still a lot of fun).

Thank you to my in-laws, who have provided an extended community of well-wishing and generous hospitality (including their indulgence of such a narcoleptic houseguest): Gül Güleriyüz, Hilkat Güleriyüz, Vedia and Faruk Selman, and Mehmet Selman.

A special thank you goes to my husband, Deniz Selman, whose encouragement helped me to take the plunge and go to graduate school, and who has helped me in so many ways to make it through to the other side. Thank you for making my world bigger (in the Texan sense). From the 700 level of the Vet to backstage at the opera house in Datong, you've taken me places I never would have gone on my own, making my life richer in innumerable ways.

Finally, thank you to my family for making me who I am. My sister Cynthia has been the best role model I could have. Watching you go through life three years ahead has taught me so much—you're amazing. Thanks to you and Jason for always making me welcome in your home. And thank you for Dylan, who has made life so much more fun and who is teaching me so much as I watch him grow up.

Thank you to my parents, Ken and Louise, for sharing their curiosity about pretty much everything and their devotion to learning more about it. I am regularly amazed by how many of the things that I know were learned at the dinner table. I want to be sure you know that the Marshall penchant for getting out the dictionary is on firm footing in my household. Thank you, too, Mom, for leading the way to a PhD (and in quantitative work!) Thank you both for your support of my interests and activities, for encouraging me to follow my interests, and for adventuresomely visiting me in an array of increasingly distant locales (even when it led to

celebrating an anniversary in Ust-Barguzin). It's meant so much to me that you have always come to see the places I've lived and know the people I've lived with. Thank you.

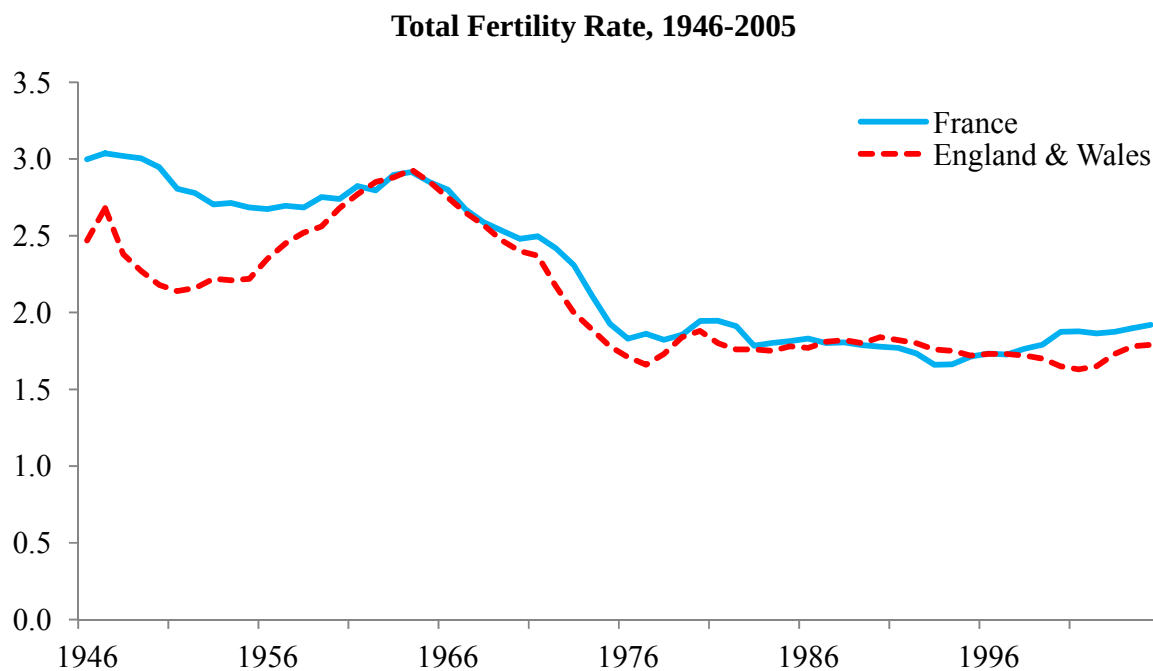
CHAPTER 1: Introduction

This project is motivated by an interest in the social processes by which states come to define the size of their populations as a problem in some times and places, but not in others. Population size has been a matter of concern for rulers and states for centuries. Within the relatively recent period of twentieth-century history alone, fears of over- and under-population have come and gone, and have led to extensive political debate and to the implementation of policies intended to address these fears. Yet it is difficult to determine why demographic patterns sometimes command the attention of policy makers and the general public, and at other times are nearly absent from public debate. In this dissertation, I use a multi-method comparative case study to investigate one case in which population was defined as a problem, and another in which it was not.

The larger concern of this study is the processes that led to the development of divergent understandings of birthrates and population in the cases of Great Britain and France in the post-World War II twentieth century. Policymakers and publics in these two countries viewed national fertility very differently during this period. Among Western European nations, France was an outlier in discourse and policy for much of the post-war twentieth century, both by virtue of the near-consensus across the French political spectrum that concern over birthrates and the danger of falling fertility was warranted, and through the consistent provision of a suite of policy initiatives thought to promote increased fertility rates (Gauthier 1996:137). In contrast, Great Britain remained at the other end of the spectrum throughout the postwar twentieth century, distinguishing itself with an almost complete absence of explicit state and public attention to below-replacement fertility or to population policy: the British government's approach to population policy has been characterized as "no problem—no intervention" (Gauthier 1996:141).

These different understandings would not be so puzzling if French birthrates had been significantly lower than British birthrates during this period. However, these two countries' fertility rates were strikingly similar throughout the period in question (Figure 1.1). (When they differed, it was nearly always French birthrates that were higher.) How did such similar trends in postwar birthrates come to be interpreted so differently in these two countries?

Figure 1.1



I answer this question by examining institutional, cultural, and historical mechanisms that led to very different understandings of population trends in these two national contexts. In order to do so, I focus on the construction of *demographic knowledge*: knowledge about population composition and change, of which interpretations of birthrates are one component. Population change is one of many topics at the center of political controversies, such as global warming and financial reforms, that require specialized expertise to understand the problem and propose possible solutions (Hilgartner 2000). By the end of the First World War, knowledge and beliefs about population change were filtered through the disciplinary expertise of demographic

experts—people with specialized training in formal statistical methods that they applied to topics in the study of population, and who were identified with the discipline of demography through their professional positions and organizational memberships. Experts were central in efforts to bring attention to fertility decline in the interwar period. It was experts who created, calculated, and interpreted the measures that were used to talk about fertility and population change in the interwar and postwar eras. Understanding interpretations of population change thus requires a better understanding of how demographic experts constructed demographic knowledge and shared it with other social actors. This analysis focuses on how demographic experts created demographic knowledge that contributed to changing or maintaining concerns over population in the post-war period.

By examining interactions among demographic experts, as well as their interactions with other social actors, I show how disciplinary commitments, cultural contexts, and institutional structures combined in different organizational settings to produce demographic knowledge. My analysis examines three different sites in which demographic knowledge in Great Britain and France were created and developed: state commissions on population in the 1940s, official national population projections from the 1950s through the 1990s, and academic journals of demography and the popular press from 1945 through 2005. I ask what factors shaped the forms and content of the demographic knowledge created at these sites, and how the kinds of knowledge created contributed to differing understandings of fertility rates in Great Britain and France.

Before outlining the research design and contribution of this study, I briefly describe the historical context in which these events occurred, and note how conventional explanations are inadequate to explain them.

1.1 British and French Histories of Population

The demographic histories of Great Britain and France are important for understanding later views of population in these countries. In fact, concerns over population were a feature of political discussions in both Britain and France well before the data or methods existed to determine whether the population was increasing or decreasing. Before Malthus's fears of population growth dominated the field of British political economy at the beginning of the nineteenth century, a number of British authors argued over whether population decline, at the national level or in rural communities, presented a threat to British society (Glass 1973). In France, eighteenth-century claims that population decline represented a threat to the nation helped to create a space for critiques of the Church and the monarchy (Blum 2002).

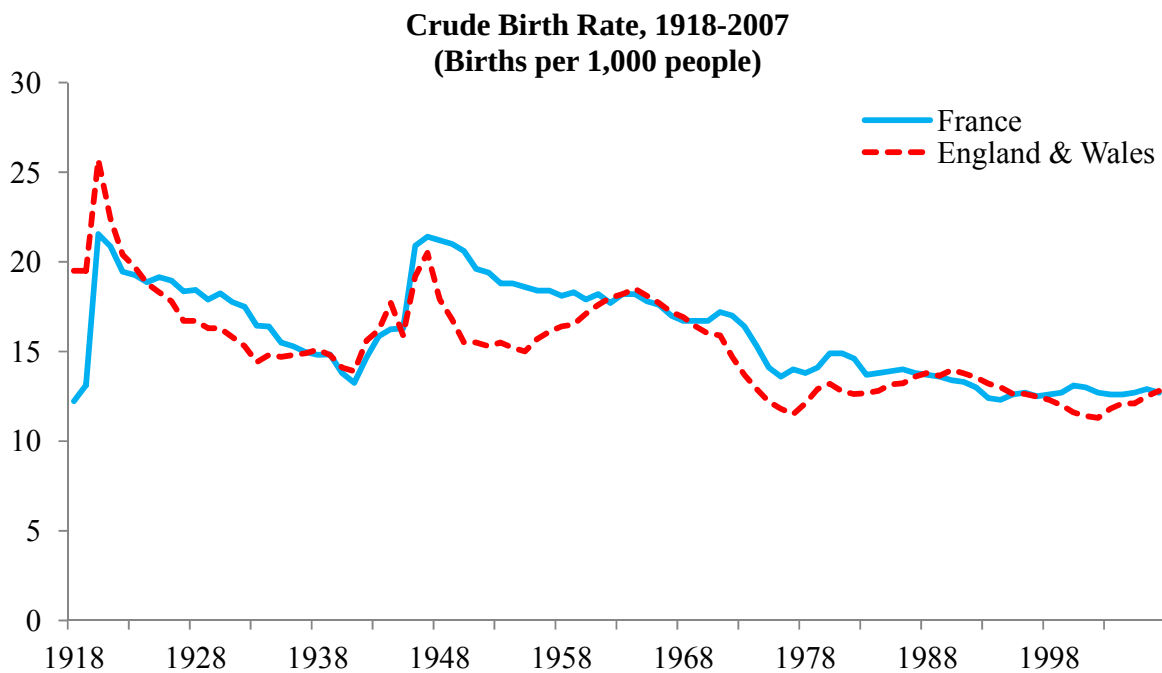
By the late nineteenth century, however, improved systems for collecting information about births and deaths showed that in Britain, as in much of Western Europe, the population had increased greatly during the nineteenth century. According to census figures, total population in England and Wales nearly doubled from about 18 million in 1851 to over 32 million in 1901 (Mitchell 1988:9). This growth occurred despite fertility rates that began to decrease by the last quarter of the nineteenth century (Tranter 1985:35). In contrast, the population of France was about 36.5 million in 1851 (about twice that of England and Wales), but grew only to about 40.5 million in 1901 (INSEE 2011). The French census of 1872 reported a population that was actually smaller than that of the previous census, conducted in 1866 (Spengler 1979:23). This information, together with the French defeat in the Franco-Prussian war in 1870, led to widely-discussed fears that the French nation itself was in decline, as the French population became outnumbered by its rivals. This line of thought provoked an impressive array of French

intellectuals to write about theories of fertility decline and population decline, often treating them as symptoms of general decline or decay in society (Spengler 1979).

These different histories did have an important influence on twentieth-century views of below-replacement fertility in England and France. However, they are invoked by demographers today as sufficient explanation of French concerns over low fertility. This conventional wisdom sees French pronatalism as a form of national exceptionalism, due to France's unique position as the leader of fertility decline in Europe. However, this explanation is ahistorical, if not deterministic: certainly, events of the nineteenth century may have affected events in later centuries, but some account is needed of the mechanism by which this history affected public and expert discourse over the course of many decades. Further evidence that the history of French and British population trends is not sufficient to explain later differences is seen in public debates over population size between the two world wars. These debates make postwar divergence in understandings of fertility even more surprising, as they reveal a period of *shared concern* over fertility and population decline in Great Britain and France.

Between the world wars, birthrates fell in both Great Britain and France (Figure 1.2), provoking extensive public debate over fertility rates in both countries.

Figure 1.2



After great losses of life in World War I, French pro-natalist propaganda posters vividly illustrated claims that fewer French births would lead to international isolation and military defeat (Camiscioli 2001). Throughout the interwar period, French pro-natalist family organizations such as the National Alliance for the Increase of the Population acted as an interest group to pressure the state for family allowances and other measures to support and “glorify” the family, justifying their efforts with appeals to the need to increase the birth rate, and eventually creating a “pro-natalist consensus” (Pedersen 1993:359-370). In Britain, a popular book warned of *The Twilight of Parenthood* (Charles 1934), and mainstream newspapers including *The Times* featured headlines such as “Dangers of a Falling Birth-Rate: ‘Alarming’ Trend of Population” (“Dangers of a Falling Birth-Rate” 1936:16). In both countries, various theories claimed that biological, economic, moral, social, or technological changes were behind dropping birthrates. As I will show in the next chapter, demographic experts produced many of the calls for public

concern in both countries, although they aligned themselves in this work with very different social movements: family associations in France, and eugenics associations in Great Britain.

Concerns over birthrates and fertility decline did not simply disappear at the end of World War II. In a speech at the end of the war, Charles De Gaulle famously declared that France needed “12 million beautiful babies” over the next ten years (Weiner 2001:23). Similarly, in a speech given near the end of the war, Winston Churchill claimed, “One of the most somber anxieties which beset those who look thirty or forty or fifty years ahead ... is a dwindling birth rate ... our people must be encouraged by every means to have larger families” (“Mr. Churchill on Post-War Policy” 1943:6). Although Churchill’s concern over low fertility has been largely forgotten today, his declaration of concern was widely heard at the time: it was part of a war-time national address that was broadcast on the radio throughout the British Empire. Concern over population was so strong in both countries that a British Royal Commission on Population was appointed in 1944, and a French High Committee on Population and the Family in 1945, to examine the issue and make recommendations for state action on the matter.

As these events indicate, at the end of the World War II, it was far from obvious that fear of population decline would continue to be an issue of public concern in France, but not in Britain, for the rest of the century. I argue that this period was a moment of contingency, in which shared public concern over falling birthrates in both countries was transformed into diverging paths that led to differences for the rest of the century. The later twentieth-century differences that seem obvious today were, in fact, not inevitable. In this dissertation, I examine this turning point and the events of subsequent years, asking what the mechanisms were by which these two countries, which initially shared concern over declining fertility, moved to opposite ends of the spectrum of concern. By asking how low fertility became an issue of public

concern in France but not Great Britain during the post-war period, this study addresses the underlying question of how population became a matter for state intervention in one case, but not in the other.

1.2 Historical Literature on Population and Theories of Population

This analysis contributes substantively to existing histories of political debates over population issues in Great Britain and France. The issue of fertility decline in France, in particular, has already been extensively studied. In addition to Blum's account of eighteenth-century population debates described above, a study by Cole describes how statistical innovations in the nineteenth century led to new forms of state intervention to counteract population decline in France (Blum 2002; Cole 2000). Overviews of discussions of the dangers of population decline have been written for France (Spengler 1979), as well as for a number of countries in Europe (Teitelbaum and Winter 1985). Although population issues in Great Britain do not receive as much attention from historians, there are multiple accounts of British population concerns: one study examines concerns over fertility decline in the context of the eugenics movement in Britain between the World Wars (Soloway 1990), and another shows how early twentieth-century fears that the population's quantity and quality was suffering led to increased medical and social intervention into mothers' practices (Lewis 1980). Histories of institutional structures that produced and interpreted information about population include Simon Szreter's analysis of ideological differences between state statistical agencies and eugenicist statisticians in late nineteenth-century Britain (1996), as well as a more conventional institutional history of the British General Registrar's Office from its founding in 1836 to the end of the Second World War (Higgs 2004).

In addition, a number of works have related histories of population fears explicitly to the development of statistical methods. The development of methods for statistical analysis by eugenicist statisticians is chronicled by MacKenzie (1981), while Desrosières compares British and French statistical practices (1998). The development of methods within processes of disciplinary formation is addressed in Libby Schweber's comparison of attempts by demographers in nineteenth-century France and England to create a discipline (2006). A more recent history of the discipline of demography can be found in Paul-André Rosental's monograph on the French National Institute for Demographic Studies, which covers the interwar and postwar periods (2003a). Aside from Rosental's work, histories of the discipline of demography in the postwar period have mainly looked for political influences on demographic research, and have focused exclusively on the influence of politically-motivated, policy-oriented funders on American demography (Hodgson 1983; Connelly 2008). My analysis contributes to the existing historical accounts of demographic research by situating postwar demography in a broader context of organizational and cultural contexts, and focusing on relatively autonomous sites for the production of demographic knowledge. Although there are numerous studies that compare demographic transitions or family policies across countries, a comparative study of the different "demographies" that have emerged in these contexts in the twentieth century has thus far been missing.

This analysis of expert thought about fertility decline and population in post-war Great Britain and France also engages with a growing body of research on the history of theories of population change. Most broadly, this project demonstrates how ideas about population, as well as the relationship between the state and the population, have evolved in specific historical circumstances (Thornton 2005; Le Bras 1991; Szreter 1996). More specifically, it builds on

recent studies that have examined what role theories of demographic change played in the post-war development of the field of demography. Many of the latter works focus on the *demographic transition theory*, a key component of demographic research. My study adds a more rigorous empirical examination of the influence of transition theory on demographic research, facilitated by cross-national comparison and studies of multiple spheres of activity in which demographic knowledge is created. In my comparison, I argue that although classic demographic transition theory dominated British demographic research, French demographers used both the model of demographic transition and an older model of demographic *revolution*. My analysis shows how the use of these two different theoretical models of fertility decline influenced demographic research in the two national contexts. Here I will describe the two theories and their treatment in the existing literature.

For decades, prominent demographers have agreed that “modern demography is, above all, about demographic transition” (Demeny 1968:502) and that “the eternal theme in demography is demographic transition” (Caldwell 1996:321). Demographic transition theory in its archetypal form is usually credited to scholars at the Office of Population Research at Princeton University, particularly Frank Notestein (1945) and Kingsley Davis (1945). Their accounts describe a process by which populations change from a demographic regime with high mortality and high fertility to a demographic regime with low mortality and low fertility, usually described as a transition from one state of equilibrium to another. Although there is a great deal of debate over transition theory concerning the causes of fertility decline (particularly the relative contributions of economic development and access to “modern” contraceptive technologies), for the purposes of this discussion, the stages of transition themselves are of interest, not their causes.

A few critical examinations of demographic transition theory have examined the relationship between the theory and political influence, portraying transition theory either as a manifestation of political interests, or a tool for promoting them. In one such analysis, Hodgson claims that political considerations strongly influenced revisions to the theory. He argues that although early statements of the theory claimed that a suite of economic and cultural changes were needed before fertility decline could occur, in later versions of the theory, Notestein and Davis reversed the direction of causality, claiming that fertility decline would itself cause economic and cultural changes (Hodgson 1983). Hodgson claims that the latter interpretation served American Cold War interests in curtailing population growth in less wealthy countries. In a second critical analysis, Szreter argues that the same political considerations led to the theory's dominance in the field of demography in the postwar period, despite the fact that earlier statements of similar ideas had not received such interest (1993). Both of these studies assert that the prominence of demographic transition theory affected the development of the discipline of demography, although they do not explicitly study the processes by which this influence occurred.

In contrast to transition theory's high profile, the *theory of demographic revolution* has been largely forgotten by demographers today. The most important statement of this theory, a 1934 monograph on fertility decline by French demographer and statesman Adolphe Landry entitled *The Demographic Revolution (La révolution démographique)*, is usually mentioned in more recent accounts as a "forerunner" of demographic transition theory (e.g., Kirk 1996; Szreter 1993). This characterization obscures an important difference between the theories of demographic transition and demographic revolution (a difference highlighted by van Bavel

(2010)): their claims about the level of fertility *after* an initial decline from high fertility to replacement level.

In his book and in an essay outlining the same theory, published a year earlier, Landry describes three demographic regimes. In the first, high mortality and “procreation without restraint” result in a population equilibrium whose level is determined by mechanisms of mortality. In the second, a desire to “maintain the level of well-being to which one has become accustomed” leads some to delay or forgo marriage, so that the population has an equilibrium whose level is determined by mechanisms of nuptiality (Landry 1987 [1933]:737). In Landry’s third demographic regime, a desire to improve the circumstances of life leads to the use of marital birth control, so that the main mechanism affecting population size is marital fertility. Landry underlines a key difference between this mechanism and the others: he argues that in this last regime, “there is no longer an equilibrium” (Landry 1934:53; Landry 1987 [1933]:738). This lack of an equilibrium means that fertility decline can *continue below replacement level*, which can eventually lead to population decline. This aspect of demographic revolution differs greatly from demographic transition theory, which claims that fertility decline will end with *fertility stabilizing at replacement level*: according to demographic transition theory, fertility and mortality reach a new equilibrium and the society “completes” the transition, eventually reaching a stable population size.

Since most historical accounts describe Landry’s work as an early version of demographic transition theory, they erase from the historical record the differences between his theory and standard demographic transition theory. Even in a paper devoted to the possibility that post-transition fertility could decline to below-replacement levels over the long term, Landry is grouped together with Notestein and Davis as representatives of “classical transition theory”

(Demeny 1997:104). The distinctive aspects of Landry's theory are thus rarely represented in mainstream demography. The influence of his work on others has also been largely forgotten: Szreter asserts that earlier versions of transition theory "found no significant wider audience...this is also true of the various other early progenitors of transition theory in other countries," among whom he cites Landry (Szreter 1993:664). My analysis shows that Landry's model did indeed influence demographic knowledge; my comparative research uncovers his influence on French demographic research, a phenomenon neglected by existing Anglo-centric analyses of transition theory and demographic research.

Despite the general neglect, a few demographers have called attention to this key difference between Landry's theory and classic transition theory, calling for renewed examination of Landry's theory and noting its relevance for low-fertility demographic regimes today (van de Kaa 2004; Thornton 2005:107). A more sustained treatment, which highlights the importance of the distinction between demographic transition and demographic revolution, is found in a study that examines differences between the causal explanations given for interwar low fertility at the time and the explanations generally accepted today. The author shows that although more recent accounts treat interwar low fertility as an isolated occurrence, explained by extraordinary conditions of economic depression and fears of war, the causal explanations used in interwar discussions of below-replacement fertility rates are, in fact, quite similar to those used in discussions of recent below-replacement rates (van Bavel 2010). My study directly addresses an assumption found in several of the studies described here: the assumption that use of different models of demographic change will affect the focus of demographic research. My analysis shows *how* demographic research might be affected by the use of these demographic

models, by examining both the mechanisms and the outcomes of this difference across spheres of demographic knowledge construction.

1.3 Contribution

This study contributes to two traditions in the sociological literature. First, it takes as a starting point the central claim of the social problems literature that “social problems,” rather than being self-evident, are defined as such through contentious social processes (Hilgartner and Bosk 1988). The analysis shows how the process of social construction operated so that post-war fertility rates came to be defined as a social problem in France, but not in Great Britain. By specifically focusing on the role of experts in this process, my research shows how expertise can operate in politically contentious contexts.

Second, this study builds on sociological research that examines how knowledge about social life is produced and reproduced through processes of quantification, classification, and statistical analysis. In a programmatic piece, Espeland and Stevens call for greater attention to the processes and effects of quantification, which they define as “the production and communication of numbers” (2008:401). By studying how demographic experts studied fertility and population growth through quantitative analysis, my research addresses the need that Espeland and Stevens outline for greater understanding of how quantification affects social life.

This work thus investigates a key site of tension in scientific thought described by Desrosières: as he notes, science “preaches an objectivity, and, thereby, a universality” that is the source of its authority, while at the same time “this authority...can only be exercised to the extent that it is party to the world of action, decision making, and change.” Thus “the question...is to study how the tension between the claim to objectivity and universality, on the one hand, and the powerful conjunction with the world of action, on the other, is the source of

the very dynamics of science, and of the transformations and retranslations of its cognitive schemes and technical instruments” (Desrosières 1998:6-7). By examining how demographic experts created demographic knowledge in interaction with each other, state agencies and social movements, and how their interactions affected the kinds of knowledge they created, my research asks how leaders of a discipline devoted to empirical analysis (indeed, one often critiqued for neglecting theory in favor of empiricism), with a disciplinary identity firmly rooted in quantitative methods, were able to interpret such similar quantitative trends so differently.

1.4 Structure of the Dissertation

This dissertation asks how the production and dissemination of demographic knowledge contributed to the maintenance or attenuation of concern over population and fertility decline in Great Britain and France during the post-war period. Each chapter investigates a different sphere of activity in which demographic knowledge was produced, reproduced, and disseminated: state commissions on population, national population projections and academic journals of demography. I compare the activities and contributions of demographic experts in the two countries in each of these spheres, including their interactions with state agencies, social movements, and other experts.

The second chapter examines state commissions on population appointed in the 1940s, using interpretive analysis of archival documents from the commissions’ operations to show how demographic experts’ participation in the activities of the commissions reflected and shaped their understanding of demographic research and its role in public debate in each national context. The third chapter examines official population projections in each country during the fifty years following World War II, showing how organizational, methodological and cultural factors shaped the production of each country’s projections, and how their differing projections led to

different visions of the demographic future. In the fourth chapter, I use topic modeling, an innovative method for identifying themes in a collection of documents, to compare French and British demographers' academic publications about fertility in the sixty years following the Second World War, as well as to compare British academic and mass-media publications related to fertility and population. I ask to what extent and how the self-regulated field of demographic knowledge produced in the journals developed differently in these countries, and how this development was related to contemporary demographic trends. The comparison of academic and popular publications allows an analysis of the relationship between expert knowledge and common knowledge in the British case.

CHAPTER 2: Declining Fertility, Public Concern, and the Discipline of Demography

This chapter examines state-appointed commissions on population in postwar Great Britain and France. The commissions were a highly visible forum for public and policy debates in which demographers participated. As I will show in this chapter, the commissions served both as sites for the articulation and evaluation of the dominant concerns and beliefs about fertility decline of the interwar period, and as sites in which demographic experts defined their professional identity and their work in opposition to other parties. Evidence from the commissions' operations sheds light on how demographic experts at the beginning of the postwar period understood their discipline, what kinds of empirical evidence they believed were most valuable for demographic research, and what they thought demographers could contribute to public discussions of population.

The commissions' archival and published records offer insight into these issues via two arenas of interaction: exchanges among different organizational and disciplinary actors *within* each country's commission, and exchanges *between* members of the two commissions. In internal disputes, actors from different organizational backgrounds, with different disciplinary commitments, enacted demographic expertise to support their opposing disciplinary claims through arguments over ostensibly technical issues, such as methods for the measurement of demographic phenomena. In exchanges between members of the different national commissions, points of agreement and disagreement provide a strategic site for the examination of the kinds of evidence demographic experts considered most relevant to debates over fertility and population. I use transcripts of joint meetings between the two commissions to outline cross-national differences in approaches to evidence and demographic knowledge, particularly those of the commissions' demographic experts. This analysis shows how British and French demographic

experts located themselves in debates over fertility decline and what they themselves thought their expertise contributed to the debates.

The first section of this chapter focuses on the main actors involved in the interwar public debates over birthrates and population that led to the appointment of the commissions. In it, I describe the organizational locations and professional and intellectual backgrounds of these actors. In the second section, I outline the structure of the two state commissions on population, including representation of the various organizational actors on these commissions. The third section discusses controversies that occurred *within* each commission's membership; these show how demographic knowledge and its uses were understood by different parties within each national context. This section focuses on disagreements over demographic calculations and procedures, which illuminate disciplinary differences among central organizational actors. In the final section, cross-national differences in demographers' understandings of the goals and contributions of their discipline are explored by examining differences between the two commissions, focusing on their approaches to evidence. I describe the kinds of demographic and social knowledge that demographers cited as most convincing to support their claims about population change and fertility decline in discussions of population policy. I then locate their positions relative to "national styles" of statistical thought that have been identified by other scholars.

The post-war commissions examined in this paper serve both as sites in which the dominant concerns and beliefs of the interwar period are articulated, and as sites in which the stage is set for later debates about this issue. By examining how demographic experts from both countries articulated their claims, and in what ways they agreed or disagreed with other members of the commissions, I show how demographic knowledge was invoked to promote or reject ideas

about fertility and population at the beginning of the postwar period. The commissions were a forum in which postwar British and French demographers worked to define their disciplinary expertise and goals amidst new institutional configurations. As my analysis demonstrates, they pursued this self-definition partly by staking claims to superior expertise in opposition to other disciplines and organizational actors in their own countries, as well as by defining their differences from colleagues from other countries, as they do in the two commissions' joint meetings.

2.1 Organizational Actors

In interwar France, organizational activity related to population and the birthrate centered on the “familist” movement of pro-natalist family associations. A second group of organizational actors complemented these activities: demographic experts who were affiliated with state institutions, either in an official capacity as researchers, or as holders of political office. In Britain, the eugenics movement was the center of organizational activity around the birthrate; prominent demographic experts supported and were supported by the Eugenics Society. Studies of population and birthrates in Britain were also conducted by government officials responsible for the collection and analysis of official statistics related to population, whose professional training was as civil servants, actuaries and medical statisticians. More detailed discussion of these groups follows.

2.1.1 France: Family Associations

Family associations in interwar France formed a strong movement that lobbied successfully for the interests of families. Perhaps their greatest success was the creation of a system of family allowances, provided first by employers, and then by the state. The associations included organizations such as the National Alliance against Depopulation (*Alliance nationale*

contre le dépeuplement), earlier known as the National Alliance for the Increase of the French Population (*Alliance pour l'accroissement de la population française*), and The Largest Family (*La plus grande famille*). The familist organizations were the core of a successful social movement during the period between the two world wars. Their work as a political pressure group led to a pro-natalist consensus during the interwar period, which united representatives from across the political spectrum and facilitated the creation of a national system of family allowances (Pedersen 1993:359-370). One of the key features of this movement was its focus on the (male) household head (*père de famille*) as the agent who should serve as the conduit of state or social support for the family (Pedersen 1993).

Among the most prominent leaders of this movement was Fernand Boverat, a wealthy industrialist who devoted himself to the cause of pro-natalism and support for families as the head of the aforementioned National Alliance (Reggiani 1998:127-8). His advocacy on behalf of families often had a highly moralistic tone, even when it was not explicitly religious. (Unlike many of the members of French pro-natalist movements, Boverat was not Catholic.) Boverat led a propaganda campaign against abortion through publications of the National Alliance in the 1930s and 1940s (Koos 1999). One of his more notorious actions in the 1930s was instigating the prosecution of a dancer at a Paris cabaret for public indecency.¹

Family associations of the type led by Boverat continue to exist in France today. They are still represented in public institutions through their designated positions on the national and local

¹ *Time* magazine published a highly entertaining account of the courtroom proceedings, describing Boverat as “striped-trouserred, bespectacled, correct, relentless,” and quoting him as saying, “in dead earnest ... ‘Women, after beholding such indecency, don’t want to have children...public morality and the birthrate are intimately interrelated’” (“France: Population vs. Poetess” 1935).

Family Allowance Funds (*Caisses d'Allocations Familiales*) created to administer family benefits at the end of the Second World War.

2.1.2 France: Demographic Experts

The second group of organizational actors central to interwar population debates in France consisted of demographic experts. They were individuals with formal training in statistics that they used to conduct research on demographic topics. The most important of the French demographic experts was Alfred Sauvy, a true public intellectual, who after the Second World War regularly contributed columns to the influential newspaper *Le Monde* (Keyfitz 1990:727), and who coined the term “third world” (Tabah 1991:357). Sauvy received his degree from the prestigious *École polytechnique*, then worked at the state statistical agency, General Statistics of France (*Statistique général de la France*) (Lévy 1992:1397). He advised prime ministers before and after the Second World War, and also conducted research on population and fertility for Boverat’s National Alliance. In 1945 Sauvy became first director of the National Institute for Demographic Studies, known as INED (*Institut national d’études démographiques*), a position that gave him great influence on demographic research agendas in France (Rosental 2003a:148-150).

Another prominent demographic expert, who held political office as well as academic positions, was Adolphe Landry, the author of *The Demographic Revolution* (*La révolution démographique*), described in Chapter 1. Landry was for some time a professor of the history of economics at the *École pratique des hautes études*, then served in Parliament and as a Minister in several governments in the interwar period, including as Minister of Labor (Sauvy 1956:611-612). He was also a high-level member of international organizations—he was elected President of the International Union for the Scientific Study of Population Problems in the 1930s and again

at the end of the Second World War—as well as familist organizations: he joined the National Alliance in 1912 and later served as its Vice President (Sauvy 1956:611, 613-614). Landry's academic contributions to demographic debates did not stop when his political activity began: *The Demographic Revolution* was published in 1934, long after he was first elected to office.

2.1.3 Britain: The Eugenics Movement and Demographic Experts

In Britain, unlike in France, no strong social movement ever mobilized around family issues. British debates over declining birthrates prior to World War II were, however, closely linked to another social movement: the eugenics movement. Although this movement was strongest in Britain in the years before World War I, it was still quite active in the interwar period. During this period, the Eugenics Society made a strategic decision to focus on gaining legitimacy through scientific research, which led to the founding of the Population Investigation Committee (PIC) in 1936 (Soloway 1990:247-249). The eugenicists' concerns about declining fertility were focused on differential fertility: in addition to concerns that declining fertility levels were a threat to the nation (similar to the French concerns), they also argued that fertility levels had declined mainly among the upper and middle classes, which implied to them that less desirable members of the lower classes would, over time, numerically overwhelm the other classes. British concerns over differential fertility had been bolstered by the results of the 1911 census showing higher fertility among the “lower” social classes (Szreter 1996). A related debate arose over the question of whether “national intelligence” (the average level of intelligence in the country as a whole) was declining over time (Soloway 1990). Increasing concern at reports of fertility rates below replacement level, along with projections of population declines within twenty years, were reported in British newspapers (Soloway 1990:232-46; Winter 1990:445-48).

As in the French case, the activities of demographic experts with formal training in demographic methods complemented the work of this social movement. The PIC recruited academic demographers to conduct research on fertility and population policy in the 1930s. Many researchers drew attention to declining birthrates during the interwar period, and called for more attention to be devoted to the topic (Thane 1990). Scholars including Enid Charles, Lancelot Hogben, Grace Leybourne, and Robert Kuczynski produced demographic analyses that raised the question of whether declining birthrates posed a threat to the nation, the race, or humanity (Glass 1936; Leybourne 1934; Hogben 1938; Kuczynski 1942). Prominent social scientists from other fields, including John Maynard Keynes and Robert Titmuss, joined them in calling attention to declining fertility (Keynes 1937; Titmuss 1938, both cited in Thane 1990). Although some of these scholars opposed eugenics, most notably Hogben (MacKenzie 1981:46), the eugenics movement had a long history of connections to formal statistics: pioneers whose work is still widely known today by students of statistics, including Pearson (familiar to students of statistics from “Pearson’s r ”) and Fisher (of the F-test), developed many of their methods as they worked to demonstrate that “quality,” or ability, was a hereditary trait (MacKenzie 1981).

For British academic demographers in an institutional context that offered few resources for the discipline of demography, the institutional support provided by the PIC was extremely valuable. For example, the PIC supported the demographic research of David Glass, who would become the leading British demographer in the postwar period, by hiring him as a research secretary. This position allowed him to further develop his doctoral dissertation into the large volume *Population: Policies and Movements in Europe*, published in 1940 (Langford 1988:5, 9). The PIC also worked for the passage of the Population (Statistics) Bill of 1938, which was passed amidst increasing pressure for the state to address fertility decline, although only after

raucous Parliamentary debates. The Bill mandated the collection of more information about birthrates, despite concerns about the “intrusiveness” of questions about the timing and number of births, and contained a provision making responses compulsory (Soloway 1990: 250-52). This bill shows the influence of academic demographers in the debate: addressing fertility decline through the collection of better statistics reflected their empirical approach to social problems.

Other research opportunities for demographers were scarce: between the World Wars, no university position in demography existed until 1938, when Robert Kuczynski held the first readership in demography at the London School of Economics (LSE), funded by the Rockefeller Foundation (Grebenik 1991:8). Kuczynski had immigrated to Britain in 1933 as a refugee from Hitler’s Germany. He had worked in Germany for the statistician Richard Böckh, inventor of the index of fertility known as the Net Reproduction Rate, which Kuczynski popularized in his work and adapted as the Gross Reproduction Rate (Glass 1947). After Kuczynski’s retirement in 1941, there was again no university position in demography until David Glass was appointed to the same position in 1945 (Grebenik 1991:18). One British demographer who began his career around that time reports that the only other demography-related academic positions during this period were a chair in Social Biology at LSE (also funded by the Rockefeller Foundation) from 1930 to 1937, a chair in Eugenics at University College London (created with funds from Galton’s estate (MacKenzie 1981:104)), and a chair in Vital Statistics and Epidemiology at the London School of Hygiene and Tropical Medicine (Grebenik 1997:575).

It is important to note that, although academic demographers were institutionally marginalized during this period by a lack of positions designated for their discipline, their association with eugenicists did not put them on the fringes of public discourse. The eugenics movement was not marginal in interwar Britain: John Maynard Keynes delivered the Galton

Lecture to the Eugenics Society in 1937, while Alexander Carr-Saunders was an active member of the Society before and during his tenure as the director of the LSE (Soloway 1990).

2.1.4 Britain: Civil Servants

While academic demographers were sounding the alarm over declining birthrates in the interwar period, government officials responsible for vital statistics were providing public assurances that trends in fertility did *not* warrant concern or intervention. The opposition between these two groups continued a long history of disputes between public-health officials and eugenicist statisticians dating back to the nineteenth century, which often took the form of technical disputes over methods of measurement and inference (Szreter 1996). The main source of population statistics during the interwar period, aside from the work of academic demographers, was the General Register's Office (GRO), headed by the Registrar General, which administered the state system for the registration of births and deaths. Their publications of registration data also usually included some analysis of the data (Nissel 1987).

The GRO included employees trained in formal statistics and administrators from the Civil Service. As Fourcade notes, in the British civil service, "bureaucratic culture and knowledge are ... forged mainly through on-the-job training and long tenure in administrative positions," resulting in "administrative departments [that] generally have well-formed and long-lasting 'views,' into which their staff is socialized early on." Fourcade argues that this culture is facilitated by a system that recruits civil servants from elites coming from a classical education system, rather than specialized technical training (2010:42). This system resulted in decision-making by administrators who lacked the technical training of their employees, a situation that led to calls for reform in the 1940s but was not resolved until much later. One former Chief Population Statistician recalled in his memoirs "the severely restrictive working conditions

which were imposed by successive Registrars General from 1946 until ... 1963.” He reports that, although members of the Statistician Class (created as part of the Civil Service in 1946) “administered their own work and directly controlled their supporting clerical staff ... the then Registrar-General took a contrary view; that they were professionals who should not be allowed to administer but only to act as statistical advisers to career administrative staff ... It was irksome and not conducive to good professional work; it inhibited statistical innovation” (Benjamin 1982:222).

The GRO employees who did have formal training in statistics, which at that time may have been very similar to the education received by demographers (since degrees in demography were not yet available), were nevertheless professionally distinct from the demographers. They usually were credentialed as actuaries or medical statisticians, and they belonged to different professional associations and published their work in different journals than demographers. During this period, these officials repeatedly asserted that trends in birthrates were no cause for public concern. Their disagreements with the British academic demographers will be described in more detail below. As I will show, disciplinary differences between the academic demographers and the civil servants in Britain played a role in their disagreements.

2.1.5 Cross-National Commonalities and Contrasts

It should be noted that the foregoing analysis documents the *most prominent* organizations and movements related to debates over population and fertility decline in each national context. I do not claim that interest in eugenics was absent from interwar France, or that no campaign for family allowances existed in interwar Britain. There was in fact a French eugenics movement during the period, and certain aspects were retained even after World War II, such as a requirement for pre-marital medical exams (Schneider 1990). INED even published a

volume devoted to eugenics in 1950 (Sutter 1950). However, French discussions of the “qualitative” aspects of population often referred to public health measures: the influence of Lamarkian genetics, which held that changes within a single generation could be inherited by descendants, increased the focus on so-called “positive” measures to improve population quality, rather than “negative” measures to improve quality by preventing reproduction by certain people or groups. Negative measures such as sterilization and birth control were also impeded in France by Catholic opposition to eugenic programs, which strengthened after the 1930 papal encyclical that explicitly rejected eugenic programs (Schneider 1990:195-6). In sum, although French eugenics left its mark in certain areas, it did not have the organizational capacity of the British eugenics movement before World War II.

There was also a campaign for family allowances in interwar Britain. Led by Eleanor Rathbone, the campaign was ultimately unsuccessful, in large part due to opposition from trade unions that feared that family allowances would depress wages (Pedersen 1993). It also could not seek help from organizations like the French family associations, for which no analog existed in Britain. Furthermore, the connection between family allowances and fertility decline was not made as strongly in Britain as it was in France: the British campaign primarily focused on recognition of mothers’ contributions to the family and society. In fact, David Glass believed that Rathbone linked the family allowance campaign to concerns over low birthrates out of opportunism, rather than out of sincere concern over fertility decline (NA RG/24/4, 6/18/47, p. 12). The failed family allowance movement in Britain was never associated with the kind of broad social movement and political consensus that the family movement achieved in France.

2.2 State Commissions on Population

The postwar state commissions on population in Great Britain and France grew out of interwar fears of population decline, and the major organizational actors participating in debates over fertility and birthrates in each country, described in the previous section, were represented among their membership. The French population commission has been recognized as a highly influential organization whose influence shaped family in postwar France (Nord 2010; Rosental 2003a). The few historians who have written about the British Royal Commission on Population (BRC), however, have concluded that it had essentially no impact, and certainly its political impact was not what some had hoped for: the findings were never discussed by Parliament or otherwise explicitly taken up by policymakers (Winter 1990; Soloway 1990). However, these accounts have ignored the BRC's impact on academic circles, although some demographers have noted it (Grebenik 1991): the BRC's report was written up in British and foreign scholarly journals, and was described as an important contribution to the discipline of demography (Notestein 1949). Yet no study thus far has been dedicated to the influence of the BRC on the discipline.

I argue that the work of both the French and British commissions was an important part of the context in which legal and organizational structures that would shape social policy throughout the rest of the century were being put into place: in Britain, these included the social security system, the National Health Service, and the expansion of public education, while in France, the "French model" of the post-war twentieth century was "put together...in a burst of institutional creativity just after the Second World War" (Nord 2010:20). During this crucial time, the post-war approach to below-replacement fertility was also set on its course in both countries. In this chapter, I show how demographic experts on the population commissions

participated in a process that influenced institutional, political and discursive post-war outcomes. As they considered a wide spectrum of interwar accounts of the causes and consequences of fertility decline, demographers defined their approach to empirical evidence, their role in the creation of demographic knowledge, and their relationship to policy and public debates. This process of definition often occurred through the mechanism of disagreement or conflict with other demographic experts, either members of the commissions from other disciplines, or commission members from the other country. I will first describe the history and structure of the commissions, before discussing their activities in the next section. (See Appendix B for complete lists of members of both French High Committees and the British Royal Commission.)

2.2.1 The French High Committee on Population and the Family (FHC)

In February 1939, the French government appointed a five-member High Committee on Population (*Haut Comité de la Population*) to make recommendations for population policies. After extensive meetings held over less than six months, the Committee delivered a *Code de la Famille* to Parliament, which was “adopted without discussion” (Winter 1990:444). Implementation of the *Code*, however, was not as smooth. The proposals included plans for family allowances and birth premiums, and also measures intended to protect the family from depravity and vice, which increased penalties for abortion, limited alcohol consumption, and punished publication of pornography. Archival records of the Committee’s correspondence show that these latter measures were vigorously pursued by the Committee, while the financial incentives were more difficult to implement (AN F/60/495), perhaps due to financial limitations (Rosental 2003a:29-30).

Despite serious ruptures to the political and organizational climate in France due to the Vichy regime’s ascent in 1940 and the Liberation in 1944, there was some continuity in the

structure and membership of the various organizations that addressed population and the birthrate over this period (see Appendix A for a timeline). A year after the Vichy government was formed, the inter-war High Committee on Population ceased to exist. When a new Consultative Committee of the Family was created, it included three of the five members of the first High Committee, as well as three more representatives of the National Alliance (Rosental 2003a:60). (Boverat was not among them, however.) After the Liberation, a new High Committee on Population and the Family was appointed, with three of the ten members drawn from the original membership of the interwar Committee (Rosental 2003a:23).² This committee's task was to make recommendations for population policy to the government; members included Fernand Boverat, Alfred Sauvy, Adolphe Landry, two leaders of other family associations, a trade union leader, and the new Minister of Population, Robert Prigent. The prestige of the FHC is attested to by the status of its members, the fact that it reported directly to the Prime Minister, and the fact that General de Gaulle himself presided over the first meeting (Rosental 2003a). The FHC made a first set of recommendations to Parliament for legislation on family benefits, many of which were passed into law in August 1946.

2.2.2 The British Royal Commission on Population (BRC)

In November 1943, it was announced in the House of Commons that the government would appoint a Royal Commission on Population ("Birth-Rate Inquiry" 1943:4). In 1944, a Royal Warrant established the Royal Commission on Population, "to examine the facts relating

² The history of the *Haut Comité* is part of a larger historical discussion on the extent to which the transitions from the late Third Republic of the interwar years, the Vichy regime, and the post-war Fourth Republic represented ruptures or continuity with the previous regimes. Here, I focus mainly on the post-war *Comité* as a site for the expression of concerns over low fertility, for the elaboration and contestation of competing frames for understanding low fertility, and thus for the establishment of post-war narratives about low fertility. However, earlier organizations and narratives influenced the second FHC, as shown by the overlapping membership of the first and second FHCs (see Appendix B).

to the present population trends in Great Britain; to investigate the courses of these trends and to consider their probable consequences; to consider what measures, if any, should be taken in the national interest to influence the future trend of population and to make recommendations” (Royal Commission 1949:iii).

The structure of the BRC was quite different from that of the FHC. It had eighteen members, selected not as representatives of the Government, nor as experts, but as “ordinary people” who would evaluate the issue from this perspective (NA RG 24/4, p. 2). However, the “ordinary people” of the BRC were to rely on extensive consultation with experts. In a structure that the Commission refers to as “unusual” in its final report, three expert committees (Statistical, Economics, and Biological and Medical) were appointed to assist the BRC, and the heads of these committees also served on the Commission itself; the Commission noted that its final report “owes much to the work of the scientific committees” (Royal Commission 1949:1).

The Eugenics Society saw the BRC as an opportunity to reach a broader audience, and lobbied (judging by the results, successfully) to have sympathizers represented on the Commission (Soloway 1990:337-343). The Statistical Committee, which conducted the extensive demographic analyses made by the BRC, included among its members both David Glass and Robert Kuczynski, and was chaired by Alexander Carr-Saunders. In addition to the representatives of academic demography and the eugenics movement, the Statistical Committee included representatives of the General Register Office, in the persons of the Chief Medical Statistician and the Chief Statistician of the GRO. (The latter was trained as an actuary.)

Glass in particular exercised a great deal of influence on the operations of the BRC. Although he was not a member of the full commission, he and Kuczynski were first of the dozens of expert witnesses who gave oral testimony to the full BRC, using the opportunity to

press for the collection of better data on fertility. Their efforts were ultimately successful, as they overcame opposition to conduct a Family Census with over a million respondents (approximately ten percent of the ever-married women in Great Britain) and analyze the results (Glass and Grebenik 1950:87, 92). Their victory may have been part of the reason for the BRC's lack of public influence, however: the Family Census analysis held up the BRC's final report until the Baby Boom had begun, and many have argued that this accident of timing lessened its impact (Winter 1990; Grebenik 1991). Glass was also a prominent participant in the joint meetings of the BRC with the FHC, the only participant who was not a member of the full Commission.

The BRC met approximately every two weeks from July 1944 through May 1945. By June 1946 it had drafted a "Suggested Scheme of Report," although the final report would not be published until 1949. When the British Commission met with the French Committee in London, it had already heard oral evidence from representatives of 22 organizations and collected written evidence from these and dozens of others. The Economics Committee had completed a draft of its report, to which only minor changes would be made before publication (Winter 1990:454). The other two committees were still conducting the collection and analysis of additional data, including the Fertility Census.

2.3 Population Statistics and Conflict between Disciplines: The British Case

In this section, I describe disputes among the different organizational actors in Britain over the measurement and analysis of demographic trends. These disputes provide insight into the differences among opposing actors, who articulate their differences and justifications in the course of conducting their arguments. As I will show, in the disputes among analysts of demographic trends, debates that were framed as technical disagreements in fact serve to illuminate the ideological commitments of the parties involved in the arguments. In the next

chapter, I will discuss how organizational resources proved key to certain groups' successes or failures in gaining the upper hand in such disputes.

The British Royal Commission on Population has been credited after the fact with bringing the GRO and demographers into closer collaboration (Nissel1987:136, Grebenik 1991:17). However, the documents remaining from that period indicate that this positive effect may have taken some time to develop, to say the least. Conflict arose on the Statistical Committee between the two members of the Committee that represented the GRO and the other members of the Committee.³ Their disagreements had begun before the BRC was created. In 1939, the Registrars General (RG) for England and Wales and for Scotland produced a White Paper on population for a Royal Commission (unrelated to the BRC) that clearly articulated a lack of concern over fertility decline; the paper was published in 1942. Although the paper contained projections that showed slow population decline occurring by 1961, the text made it clear that the authors thought that earlier projections had been alarmist (*Current Trend* 1942:2). In response to the White Paper, Kuczynski wrote a short volume entitled *The New Population Statistics* (1942). The introduction to his combative analysis explicitly acknowledges that substantive disagreements over interpretations of fertility trends map onto professional divisions between researchers: it refers to the disagreement between the RG and the “unofficial statisticians,” or “independent workers” over the need for concern over recent trends (Kuczynski 1942:6-7).

In his analysis, Kuczynski first gives an exhaustive account of his dissatisfaction with the way the RG has reported the new information about births that resulted from the Population

³ Although both of the GRO representatives did have formal statistical training, they were not demographers: one was an actuary, the other a medical statistician. The Registrar General had no formal statistical training.

Statistics Act of 1938. He devotes the second section of his response to a critique of the RG's own population projections. The baseline assumption about fertility used for the projections is that births will remain constant at 700,000 per year. As Kuczynski points out, as generations of different sizes move through the childbearing years, a constant number of annual births will imply varying birthrates. Specifically, fertility rates will have to rise in the future to maintain the same number of births, because the number of women entering the childbearing years is expected to decrease in the future, both due to below-replacement fertility and due to what Kuczynski is sure will be "long-lasting effects" of low fertility during WWII (Kuczynski 1942:19). Glass makes a similar critique of the same projections in a separate article (1944). Kuczynski also critiques the RG's expectations about future trends of marriage: he notes that while fertility has increased slightly due to earlier marriage, increases in marriages are limited by the population of unmarried women (and men, for that matter), which was unusually large when the fertility increase began (Kuczynski 1942:20-21).

Kuczynski and Glass's critiques of the RG's claims on these grounds can be understood as a disciplinary claim to privileged understanding, understanding that is reached through the application of the demographer's population perspective. They argue that the RG has neglected to consider the implications of age structure and cohort size for future trends, relying instead on simplified assumptions that don't conform to what demographers know about demographic behavior. Through their understanding of demographic methods, they can provide more meaningful understandings of future trends. Further disciplinary claims of the need for specialized training in demography are made in the Report of the Statistical Committee of the BRC, which also proved to be a site of open conflict between these two professional groups.

The dispute on the Statistical Committee was intense and public. After a flurry of attempts at mediation, including a hastily-called extra meeting of the Committee (NA RG 24/6, correspondence from 9/27/1949, 11/12/1949, 11/17/1949, 11/19/1949), the dispute ended with the two dissenters agreeing to sign the Committee's final report of the Committee only with a "reservation," expressed in an addendum to the report (Royal Commission on Population 1950:17-20).

The disagreement seems at first to be purely technical; it concerns techniques for the measurement of reproductive rates, or how to calculate the extent to which a population is "replacing itself"—producing enough offspring to maintain its size. However, the terms in which the GRO's representatives make their argument indicate a clear attempt to stake out professional territory perceived to be under attack: serious offense seems to have been taken at the Committee's statement that the GRO's measure of replacement, the Effective Reproduction Rate (ERR), is a "variant" of other measures of replacement, such as the Net Reproductive Rate (NRR) (Royal Commission on Population 1950:17).⁴ The extent and intensity of the discussion indicates that something quite important was felt to be at stake, although from the content of the debate it is difficult to determine what this was.

The disagreement spilled over into the public view in a more dramatic fashion at a meeting of the Institute of Actuaries, at which one of the GRO's representatives "delivered his attack on the Commission's calculations, as being heavily biased, in such a way as to suggest that on this matter the Commission had brushed aside contrary expert advice given to them by the Statistical Committee." The Chairman of the BRC, who reported the incident to the Chairman of the Statistical Committee, further notes that "this meeting was a public meeting,"

⁴ The NRR is still used by demographers today, while the ERR has been largely forgotten.

and that “those present must I think have gone away in considerable bewilderment” (NA RG 24/6, correspondence from 12/17/1949). Apparently the government officials felt so ill-served by the BRC’s report that they felt it necessary to draw public attention to their complaints, although this was clearly an embarrassment for the BRC.

In private correspondence over the matter, one reason for their discontent is revealed: in a letter to the Assistant Secretary of the Statistical Committee, one of the GRO’s representatives explains that he objects to “the general impression [the report] must give to a reader outside the Committee that the General Register Office has failed in the past to deal adequately with vital statistics” (NA RG 24/6, correspondence from 2/4/1949). The two dissenters also refrained from endorsing a report of the Statistical Committee entitled “The Organisation of Official Work on Population Statistics,” which presented the Committee’s recommendation for improvement of this work. They did give the relatively conciliatory reason that, as members of the department whose work was being discussed, they “felt themselves precluded from taking responsibility” for that discussion (Royal Commission on Population 1950:21). Although the Committee recommends in this report against separating statistical analysis of vital statistics from the structure of the GRO (Royal Commission on Population 1950:25), it makes several suggestions for increasing the autonomy and authority of technical experts within the GRO, to wit: “the working statisticians need to have the status, the freedom and the facilities necessary to enable and encourage them to give of their best,” and “we think that it would be very desirable that in future the Registrar General should normally be himself a person qualified to deal with statistical issues” (Royal Commission on Population 1950:21, 23). (The latter recommendation, at least, was not heeded until 1971 (Grebenik 1991:17).)

As the acrimonious exchanges over the Statistical Committee's report show, both professional demographers and government officials were doing a good deal of work in the immediate post-war period to assert claims of disciplinary superiority in meeting the demands of population research. Their competing claims led to an open rift over the Committee's official report, although the demographers were able to make their views more prominent in this institutional setting. Due to the temporary nature of the BRC, however, the demographers' institutional base soon collapsed when the BRC disbanded, and their subsequent dispersal to academic departments where they were, for the most part, isolated from other demographers, left them without a major platform from which to reach the public.⁵ The government officials, however, continued to inhabit the well-established institutional position that they had held before the war. The postwar activities of these two groups will be followed further in Chapter 3.

The French academic demographers did not have to contend with rivals in the realm of statistics: they were themselves part of the state statistical system. They did, however, come into conflict at times with representatives of the family associations. One such conflict over population research will be addressed in Chapter 3.

2.4. Joint Meetings of the Commissions

As shown in the previous section, British demographers defined their disciplinary contributions in part through their disputes with government officials over technical matters of population statistics. Another realm in which demographic experts articulated their own definitions of their field and their role in public and policy debates was the joint meetings of the

⁵ Work in international population organizations is an important exception: many demographers were quite active in international organizations like IUSSP that brought them together with colleagues from all over the world. However, these organizations mainly addressed research topics of population in the "developing" world, and would not necessarily help British demographers to marshal resources within their own country.

British and French commissions. The demographic experts contributed a great deal to the discussions, and many of their remarks reflect differences in their understandings of what it meant to do demographic research: their definitions of their discipline and their work were constructed at least partly through opposition to other participants in the discussion. This section examines these discussions. The complete transcripts of two joint meetings of the two state-appointed commissions, held in 1946 and 1947, provide a detailed account of these interactions. My analysis highlights points of agreement, as well as areas of misunderstanding and dissent, in how the commissions' members understood the phenomenon of low fertility, and how they understood the contribution of demography to public debate and political action on this issue.

The first joint meeting of the BRC and the FHC, held in London in September of 1946, consisted of one day of formal meetings, followed by a day of informal discussion. Separate meetings were also arranged for FHC members, including with members of the British Population Society and the Population Investigation Committee (NA RG 24/4, letter of 9/7/1946, p. 7). The second joint meeting, held in Paris in June 1947, consisted of one general meeting of the full commissions, followed by three mornings of discussions attended by members interested in the discussion topics. BRC members were also taken to visit French institutions (NA RG 24/4, R.C. 101, 5/30/47).

The first meeting was the result of an invitation issued by the British Embassy to the French Ministry of Foreign Affairs in April 1945, which noted that the "Government of France might wish to benefit by the experience gained" by the BRC, and also that "the Commission would be grateful to benefit by the experience gained by the French Committee" (AN 19860269/2, 13/4/1945). A letter from the British Foreign Office to the BRC in May 1946 portrays the joint meetings primarily as a learning opportunity for the French, referring to the

proposal that “teams from France to come here to study the work of the Royal Commission on Population,” and reports that while the French declined the initial invitation because their own Committee was too newly formed, they “would now very much like to take up this invitation” (NA RG 24-1, 5/22/1946). Despite the internal British characterization of the meetings primarily as a transfer of knowledge to the French, in fact much of the focus of the London meetings was on the French experience in the administration of population policy and the consequences of low fertility.

The second set of meetings, held in Paris in June of 1947, were proposed by the FHC and seem to have been approached with less enthusiasm by the leadership of the BRC: the Chairman of the BRC wrote to its Secretary, “I expect that considerations of courtesy and *entente cordiale* will make it more or less obligatory that we should accept the invitation sometime” (NA RG 24/1, 10/28/1946).

Transcripts exist only for the official meetings themselves, conducted over the course of one day in London and four mornings in Paris. Interpreters were used at the meetings, and the transcript from the London meetings appears to contain the interpreter’s English translation of remarks made in French, while the French transcript contains the interpreter’s translation into French of remarks made in English. In addition, letters about plans for the meetings from both the London and Paris archives include correspondence between the French and British, as well as internal correspondence among members of each organization. Additional meetings among specialists and visits to government offices and organizations were not formally documented.

2.4.1 The Value of the Population: Quantity and Quality

During their joint meetings, the BRC and the FHC found some areas of general agreement: both commissions agreed, for example, that there was some state interest in both the

quantity and quality of the population. As we have seen, state actors and demographic experts in both countries cited the size of the population as a central concern. Both commissions were also in accord that the state had an interest in the so-called “quality” of the population. However, the analysis below will show that they understood the meaning of population quality differently.

As noted above, the BRC included multiple members with ties to the eugenics movement, who were concerned about differential fertility by class and intelligence, and its effects on population quality. The French side had its own concerns about population quality: although there was no talk on the FHC about differential fertility among the French population, there was a great deal of concern about immigration and the characteristics of the immigrant population. Although the French sometimes couch their concerns in terms of culture, not genes, they do express concerns about the ability of potential immigrants from outside of Nordic Europe to assimilate into French society. (At this point, they are still mainly focused on European immigration, and are distinguishing among Nordic, Mediterranean, and Slavic populations; immigration from the colonies is not discussed.) The Secretary of the FHC, Georges Mauco, had particularly strong views about immigration and ethnicity: he proposed a system of ethnic quotas for immigration, based on his belief that abilities are distributed differently across ethnic and national groups (Weil 1999:7).

Despite their shared concerns about quality and quantity, the two commissions differed in their emphasis on these elements. The British were more concerned about differential fertility across social classes, while the French were more concerned about total numbers. That is, the French seemed concerned that there are not *enough* children being born in the country, while the British seemed more concerned that the *wrong* people are having children (or not having them). Two specific points in their joint discussions illuminate these differences most clearly. The first

concerns the type of aid provided to families by state subsidies, and the second the criteria used to define the worth of the population: whether intelligence, moral value, social value, or other criteria are most important.

In the discussion of aid in kind vs. aid in cash, one of the French objections to aid in kind is described by Boverat, who says that when aid in kind is given to all families or children, “the collectivities feed a part of the children whose parents can well feed them, and also rich children” (NA RG 24/4, 9/1946, p. 30). He considers it a waste of state resources to give benefits to parents who can afford to support their children. The British, however, are particularly concerned about relative well-being: their concerns about differential fertility mean that they most want to encourage the middle and upper classes to have children. Thus they are concerned about the relative well-being of parents compared to single people *of their own class*: they thus advocate measures that would help people at all levels of income, although they recognize that this may be politically difficult (NA RG 24/4, 6/18/47, p. 6).

The British focus on the “quality” of the population places a heavy emphasis on intelligence, and the French raise questions about whether there are other characteristics of the population that are also valuable. A report on intelligence and heredity was among the materials the BRC sent to France before their joint meetings in Paris; it was discussed at length during those meetings. In these discussions, FHC members take issue with the British focus on intelligence as the primary characteristic to measure the “quality” of the population, arguing that other characteristics may be equally important. In one instance, Sauvy questions British emphasis on intelligence testing, asking, “isn’t there also experience with tests of character and can’t they give different results than intelligence [tests]?” (NA RG 24/4, 6/16/47, p. 10). On another day of discussions, Boverat expands on this theme:

Is it not also necessary to consider, aside from people's intelligence, their social value and their moral value? I think one observes that there are families that are large because they are improvident and undesirable and there is also a large proportion of large families that are families with high moral value (NA RG 24/4, 6/17/47, p. 4).

The French participants also challenge the British focus on the heritability of intelligence, emphasizing the role of environment from a pro-natalist perspective. Sauvy continues, "aside from heredity which can manifest itself on character, is it that in large families the fact for children of being in contact with other children and having a certain experience of life, doesn't this contribute to a formation of character that will later, at adult ages, give children of large families a certain superiority to only children?" (NA RG 24/4, 6/16/47, p. 10-11) In further discussion, other members of the FHC note that ability is difficult to measure and may take a long time to appear, and that it is susceptible to environmental influences. Here, however, the terms of the debate shift to an argument over the kinds of evidence that are admissible, for, as shown below, the organizations use different evaluative criteria for types of evidence, as well.

2.4.2 Standards of Evaluation and Evidence

In addition to discussions about the substantive issues described here (what form aid to the family should take, whether the state should limit access to contraception), another type of discussion is simultaneously taking place, one about what constitutes evidence that is adequate to support conclusions. The BRC's approach toward evidence became a point of contention early in its existence, during its first hearing of oral testimony in July 1944. The expert witnesses, Kuczynski and Glass, argued for the need to hold a Family Census to learn more about existing patterns of family type, particularly the distribution of family size. Kuczynski in particular made a very strong case that hearing oral testimony would only provide the "impressions" of individuals, while a survey would give evidence that was more "reliable" (NA RG 24/9, p. 2). He

defended this position against several Commission members who questioned the need for such a census: for example, the Chairman repeatedly expressed concern that a Fertility Census would not “lead us to the practical solution of our problem,” even if “it would add greatly to our knowledge” (NA RG 24/9, pp. 6-7, 12). Kuczynski’s main argument was that in order to know what kind of policy measures were best, they needed to know what parts of the population to target to encourage childbearing—e.g., childless families vs. families that already had one or two children—and that would depend on how many such families existed.

In the end, as noted above, the demographers prevailed, and results from the Family Census of 1946 were a key part of the BRC’s final report. Furthermore, although the Commission went on to hear a great deal of expert testimony of the kind Kuczynski dismissed, its final report placed great weight on statistical evidence and analysis. Multiple members of the BRC cited the need for evidence that was more than mere “impressions,” on multiple occasions: it seems that Kuczynski and Glass were so convincing that this approach to empirical investigation became part of the identity of the BRC, in addition to being part of the identity of the British demographic experts. This commitment to statistical evidence, and distrust of other kinds of evidence, was evident in the exchanges with the FHC, and the distinction even began to be used by members of both organizations as a marker of difference, as shall be seen in the analysis below.

The FHC, unlike the BRC (but like the first French High Committee in 1939), began its work without hearing testimony or commissioning studies. It heard reports from its own members at times, but in general, agendas and minutes of its early meetings show that discussions of proposed legislation were held without preliminary study (AN 19860269/1). The Committee thus began its assigned task of making legislative recommendations without an

explicit discussion of the nature and causes of fertility decline—it seems the members thought that the causes of fertility decline were well-known, and thus did not require further discussion or research. Although the members of both organizations represented a mix of academic and non-academic professions, the archival records do not show a commitment on the FHC's part to a particular kind of evidence or logic, in contrast to the BRC. As records of the joint meetings will show, communication between the two groups about substantive differences was complicated by their differences in this area.

Both groups agreed on one of the effects of low fertility, as well—they shared a concern that population aging was a serious problem that could be caused by below-replacement fertility. Here, however, their substantive agreement still revealed a difference in standards of evidence. At the London meetings, the BRC asked the RHC, as representatives of a country that had longer experience with low fertility, whether population aging had caused problems such as “more caution, less enterprise, less initiative, less vitality.” The respondent, Alfred Sauvy, no stranger to rigorous research as head of INED, replied that although “it is difficult to measure scientifically any changes of this sort ... there is no doubt that we have seen the enfeeblement of enterprise,” and that “the results are quite certain” (NA RG/24/4, p. 18). The BRC's secretary, in his summary of the meetings, noted dryly that the French “offered confident impressions rather than concrete examples” of the “disadvantages” of population aging (NA RG/24/4 RC 93, p. 5).

As noted above, the debate over the relative influence of heredity and environment on children also became a disagreement over types of evidence, rather than the substance of the claims. The French participants mainly cited anecdotes from personal experience in support of these claims, and Commission members politely but explicitly disagreed with them on the grounds that anecdote is not suitable evidence (NA RG/24/4, 6/17/1947, pp. 10-14). Notably,

though, the demographer Sauvy framed his question about character, quoted above, in terms of “tests”: this formulation conformed to the kind of quantified evidence that the British demographers championed. In general, however, his discussions of intelligence and the value of the population appealed to a broader humanist conception than that of the British demographic experts, represented by David Glass, who preferred to focus on quantifiable, replicable measurement, even if it meant excluding considerations that were not amenable to such measurement.

Disagreements about the interpretation of a set of claims—the purported relationship between family size and intelligence—are thus articulated by the members of the two commissions in terms of the kinds of evidence that are appropriate: the British, led by Glass, their demographic expert, reject French claims on the premise that their evidence is anecdotal, not statistical, while the French (including Sauvy the demographic expert) reject the British claims on the grounds that their criteria for evaluation are too narrow. These interactions indicate that for the British commission (particularly the demographic expert Glass), their approach to empirical evidence is a defining feature of their work. Representativeness and significance are key criteria for assessing the validity of claims. The French commission, including the demographic expert, uses a broader set of kinds of evidence in order to support their claims. They explicitly include moral as well as empirical criteria in their considerations of evidence.

This distinction may reflect traditions of statistical thought in these two countries. The French are skeptical of the use of a single one-dimensional scale, the intelligence test, to measure the value of the population, and instead advocate the consideration of multiple dimensions of value, including moral and social characteristics. This distinction is reminiscent of a difference in British and French approaches to measurement of social class, described by Desrosières as a

British system that “represented social space as a continuous one-dimensional scale, summarizing the situation of individuals in a single quantifiable indicator” (1998:260), as opposed to “the multidimensional character of French social classification (Desrosières 1998:270).

2.5 Conclusion

This chapter has identified the key organizational actors in debates over fertility decline and population during the period under study, and described their roles in the activities of state commissions on population appointed at the end of World War II. The analysis of disagreements within, as well as between, the commissions has shown how demographic experts in both countries defined their work and their roles in public and policy discussions of fertility decline and population. The British demographic experts understood their contribution to be investigation of empirical evidence to determine the reasons for fertility decline and the most effective policy approach to counteract it. The French demographic experts believed that the phenomenon of fertility decline was already understood, and their contribution lay in the communication of their specialized knowledge to a wider audience. They saw their contribution to demographic knowledge as a synthesis of different perspectives—statistical, moral, and political—while the British demographers focused on disciplinary applications of technical expertise as their main contribution.

CHAPTER 3: Population Projections and Demographic Futures

In this chapter, I examine the contributions of British and French demographic experts to the development of divergent discourses about birthrates and population by examining their work in a second sphere of activity that unites demographic expertise and policy issues: population projections. Official state population projections in each country are compared by asking the following questions: 1. How did institutional and historical contexts affect which organizational actors produced population projections in each country? 2. How did methods used to make population projections differ, and what implications did these differences have for the projections that were produced? 3. How did expectations for the future differ by country: to what extent did projections of total population differ by country, and how accurate were these projections? 4. What assumptions about future fertility trends were used to make projections? What influences shaped these assumptions? What implications did differences in projections have for understandings of the demographic future? I argue that the creation and presentation of population projections facilitated certain interpretations of population trends, interpretations that differed in Great Britain and France. Projections thus both reflected and created different understandings of the meaning of population trends.

Population projections, the focus of this analysis, are both analytically valuable and substantively important for a study of how public understandings of population are formed. Analytically, since projection requires the explicit statement of the authors' assumptions about the future, and since such assumptions must be made under conditions of uncertainty (the implications of uncertainty for population projections will be discussed in more detail below), projections must be based partly on a subjective understanding of the implications of the past for the future. As a result, projections provide evidence about unstated assumptions and beliefs of

experts that underlie their quantitative analyses, since they require experts to make explicit their subjective beliefs about an uncertain future.

In terms of substantive importance, projections are one of the most high-profile applications of demographic expertise. They have played a key role in public and political debates about birthrates and population trends for over a century, by providing concrete, specific, and easily understood figures that have rhetorical power, as well as practical implications. As described in the previous chapter, population projections featured prominently in the buildup of interwar public concern over declining birthrates: in Parliamentary debates and popular media, Enid Charles's projections showing the population of England dwindling to below 20 million by the end of the twentieth century were cited repeatedly. The introduction to official French population projections from 1968 informs readers that "The first demographic projections were made in France by Alfred Sauvy in 1928. They ... contributed ... to the adoption of the *Code de la Famille*"—the legislation of 1939 that served as the blueprint for French family policy in the postwar period, particularly the system of family allowances (Calot *et al.* 1970:5). Projections also have undeniable practical importance. They are needed for state economic planning of the kind undertaken in the French five-year plans of the postwar twentieth century. They are also used by securers and managers of the social safety net, including pension plans and health care programs, who require an understanding of how the number of dependents covered by the plans will compare to the number of working-age contributors to the plans.

3.1 Research Questions and Analytic Approach

In order to understand how different population projections were produced in Britain and France in the postwar twentieth century, and what the implications of these different projections were, this chapter addresses the four research questions specified above. To answer them, the

analysis compares six different sets of population projections from each country over the course of forty years. First, I address the question of who makes official population projections, together with the closely related question of who does *not* make projections—which actors are included or sidelined in the production of projections, and what the intellectual and political dispositions of these various actors are. In order to answer this question, I extend the description of the institutional field begun in the previous chapter, describing the organizational contexts in which experts created population projections in Britain and France.

The second question is what differences and similarities there were in the processes used to make projections in these two countries during this period. I describe the method of producing projections—the cohort component method—used in both countries. I then turn to the biggest cross-national difference in methods: I contrast the single-variant projections made in Britain with the multiple-variant French projections, and discuss the implications of this difference, as well as possible reasons for it.

Third, I ask whether the projections themselves differ quantitatively across the two countries, and if so, what the nature of these differences is. Using the official state population projections produced by successful organizational actors in Britain and France from the end of World War II to the end of the twentieth century, I compare the total population projections throughout the postwar period in each country. I show how, despite their use of similar techniques of demographic analysis, experts produced very different kinds of projections in each country.

The fourth research question addressed in this chapter is how assumptions about fertility shaped the observed cross-national differences in population projections, and what the sources of these differing assumptions might be. I examine the assumptions about the future trend of

fertility that were used by the makers of these projections, and discuss how their assumptions reflect different theoretical traditions with different understandings of fertility decline. I show that different fertility assumptions are related to differing theories of fertility decline and demographic change, described in Chapter 1. The British assumptions conform to theory of demographic *transition*, in which post-transition fertility reaches a new equilibrium at replacement level and population size eventually stabilizes, while the French assumptions reflect the older theory of demographic *revolution*, with its possibility of indefinite fertility decline leading to shrinking populations, rather than a stable size. Cross-national differences in fertility assumptions can thus be linked to differing intellectual traditions of population studies in the two countries, as well as to the organizational location of the actors who made the projections. My analysis ends with a discussion of how the observed differences in national population projections facilitated different understandings of the demographic futures of these two countries.

3.1.1 Literature

Most of the existing studies of population projections have focused on the methods used for projection and the accuracy of projections (*e.g.*, Hajnal 1955; Brass 1974). Among the latter type of study are analyses of the accuracy of British projections and their assumptions about fertility (Shaw 1994, Shaw 2007) and comparisons of accuracy and assumptions across European countries (Keilman 1997, Keilman and Pham 2004, Keilman 2007). My analysis of population projections introduces an innovation with respect to these earlier quantitative evaluations of projections by using growth rates and error in growth rates to evaluate accuracy (following Grummer-Strawn and Espenshade 1991), rather than the unadjusted magnitude of error in

population size. This method allows more informative comparisons of projections over time and across populations of different size.

In addition to studies of accuracy in projections, a smaller body of work has examined the historical development of European methods for population projection and explored the social context and meaning of earlier projections (Gans 1999; Fleishhacker, Gans, and Burch 2003). Substantively, the study conducted in this chapter builds on this work, focusing on the organizational contexts in which projections have been made and their status as objects with cultural meaning. I primarily consider the methods and assumptions used to make the projections not as sources of error, but as indicators of beliefs about population trends held by the parties making the predictions. I consider the projections themselves in terms of their symbolic weight as concrete representations of possible demographic futures.

This aspect of the analysis is informed by a broader literature on *quantification*, which examines the process of creating numerical representations and the effects of this process (Espeland and Stevens 2008; Starr 1987). One central argument of this literature is that “measurement intervenes in the social worlds it depicts” (Espeland and Stevens 2008:412). This approach, like theories of performativity (MacKenzie, Muniesa, and Siu 2007), emphasizes the ability for the creation of a representation, in and of itself, to have tangible effects on the phenomenon it represents. In the case of population projections, academics and practitioners alike have widely recognized this possibility: the publication of the 1975 British projections explains in its first paragraph that “in some circumstances the publication of a projection can itself influence future events... so as to invalidate the assumptions on which the projection was based” (OPCS 1977:2). However, existing studies of population projections have not taken this theoretical perspective. In this study, I consider population projections as a type of quantification

of expectations about the demographic future, examining the cultural and political contexts of their creation, and the cultural and political implications of the projections themselves.

3.1.2 Overview of Population Projections

Population projections are models of possible futures. They provide estimates for the possible future size of a population. Taking the current population size as the starting point, assumptions about population change over time are applied to this starting population to reach an estimate of the population at a later time. Today the most commonly-used method for population projections is the cohort component method, which explicitly models the three processes by which population size can change: births, deaths, and migration. Thus the population at some time in the future can be thought of as the sum of the current population size plus the number of births, minus the number of deaths, and plus the net number of migrants (which may be either positive or negative):

$$Population(t_1) = Population(t_0) + Births - Deaths + Net\ migrants$$

In this method, the population is divided into age groups, and each group is treated as progressing through life in stages, experiencing a given set of mortality and fertility rates (usually assumed to vary with age) throughout its members' lifetimes. These calculations require a detailed set of assumptions about age-specific fertility and mortality, as well as assumptions about the age structure of the starting population and the migrant population, if they are not known. The cohort component method, first developed at the end of the nineteenth century, became the dominant method during the interwar period, and has remained nearly unchallenged since (Fleishhacker et al. 2003). This method was used for all of the French projections and all but the earliest British projections examined in this analysis.

Whatever methods are used to produce them, population projections have three features of interest that are important for this study. Projections require assumptions about the future, which necessarily entail *subjective judgments about future trends*. As noted by the authors of the French projections from 1968—in a philosophical introduction that sadly is not repeated in other publications of projections—projections for the future require “knowing how to read in the past” (Calot *et al.* 1970:7). As this expression implies, judgments required to make assumptions about the future entail beliefs about the relationship between the past and the future; until the course of future events becomes clear, these beliefs cannot be verified, only justified. Thus the authors of projections cannot simply use standardized procedures to determine expectations for the future; their expectations are thus informative about their subjective beliefs about population trends. Published population projections do often include materials that explicitly articulate justifications for the assumptions about future trends used in the projections. However, these justifications vary greatly in explicitness and logics of justification. French and British justifications for the assumptions used in official projections will be discussed further in the empirical analysis to follow.

Uncertainty is another central feature of most population projections. The salience of uncertainty grew with the rise of the cohort component method: earlier methods, which sought to extrapolate trends in total population size using mathematical formulas, were often thought of as searches for a “law” of population growth, and thus were not subject to concerns about uncertainty. The cohort component method, on the contrary, relies on explicit assumptions about the factors of fertility, mortality, and migration that contribute to total population size, and with its use, “uncertainty as an inherent feature of the future entered the consciousness of forecasters” (Romaniuc 2003:23). This uncertainty can be addressed either by designating a range of

possibility, or by calculating multiple possible scenarios (Romaniuc 2003:23-4). (In low-mortality populations like twentieth-century Western Europe, assumptions about fertility are more important in determining the projected population than assumptions about mortality, since mortality, particularly at childbearing ages, is relatively low under all assumptions.)

The third notable feature of projections, addressed by many authors including practitioners, is the tension between projections as *forecasts*, and projections as *hypotheticals* (e.g., Keyfitz 1987:241-3). Forecasts are predictions: they assert that the projected outcomes are the most likely of all possible outcomes, and thus reflect what the authors think is most likely to happen. Hypothetical, or illustrative, projections, on the other hand, make assumptions, and merely demonstrate the outcomes that will occur *if* those assumptions hold. This approach allows the projector to remain agnostic about whether the assumptions made are likely to be accurate or not. The authors of population projections often caution that their projections are not endorsements of the futures described therein. At the same time, however, those who make projections usually recognize that even when authors explicitly state that their projections are *not* intended as forecasts, they will be widely interpreted as such (Keyfitz 1987:242). Enid Charles, for example, whose projections of an English population below 20 million caused such a stir in the interwar period, noted in her study that her projections were possible scenarios of future population, not predictions (1938:75). However, when her work was mentioned in public and political debate, it was often cited as a prediction of what *would* happen to the future population, unless something were done (Grebenik 1991:8).

In fact, it would seem disingenuous to claim that hypothetical scenarios contain no judgments about the future: the inclusion in projections of certain sets of assumptions, rather than others, necessarily defines the set of future trends considered most relevant, and hence

implicitly designates them most likely. This implication is sometimes explicitly acknowledged by the authors of projections: a 1974 British publication of variants on the central projection for that year notes that two variants assuming fertility rates below the central variant are included, while only one variant using fertility rates above the central variant is included, and thus the variants “provide for more uncertainty below the central projection than above it,” since long-term higher fertility is “improbable” (OPCS 1974:7).

As the summary above shows, population projections can reflect a great deal of information about the assumptions, beliefs, and commitments of their authors. We turn next to who those authors were in postwar Great Britain and France, and how they came to have the position of producing official population projections for the state. The previous chapter introduced the major players in debates over population and birthrates in each country at the end of the Second World War; the following section describes how their organizational positions affected their roles in the production of the specific form of demographic knowledge contained in population projections.

3.2 Who Makes Projections?

At the end of World War II, new institutions proliferated in both Great Britain and France. Powerful and far-reaching state organizations such as the British National Health Service, the French Social Security program, and many others were created. This institution-building period benefited French academic demographers, but British academic demographers did not gain more secure institutional positions than they had held before. In France, new state research organizations employed demographic and other academic experts. These institutes, founded at the beginning of the Fourth Republic, include the National Institute for Demographic Studies (INED—*Institut national d’études démographique*) and the National Institute for the

National Institute of Statistics and Economic Studies (INSEE—*Institut national de la statistique et des études économique*). These organizations provided demographers with a new base of institutional support. The institutions themselves drew heavily on the material and organizational structures of research organizations set up and sponsored by the Vichy regime: when Alfred Sauvy became director of INED, he brought to the new organization much of the personnel and the computational equipment of from the Vichy-era *Fondation Carrel*, where he had worked during the war (Nord 2010, Rosental 2003a).

These research institutes, supported by the state but headed by professional researchers, gave French demographers and other specialists institutional and material support for their work, providing them with a greater measure of autonomy and a larger public stage on which to promote their ideas about population. Alfred Sauvy, as the first director of INED, was able to pursue his agenda for demographic research with greater autonomy at INED than he had enjoyed during his work for state organizations during the interwar and Vichy periods (Rosental 2003a, ch. 6). The agenda these demographers pursued was generally pronatalist. The most prominent demographers of this era—Adolphe Landry, Alfred Sauvy, Jean Bourgeois-Pichat, and Gérard Calot (the latter three of whom served as directors of INED)—were all supporters of pro-natalist policies (Le Bras 1991). Sauvy, for example, used his column in *Le Monde* to advocate for higher birthrates even at the peak of the French baby boom (*e.g.*, Sauvy 1965).

In fact, during the immediate postwar years academic demographers engaged in a power struggle with representatives of the family associations that had wielded such great influence in interwar discussions of population policy, as described in Chapter 2. Their disagreements are detailed in Rosental's account of the founding and early history of INED, which describes how the increasingly complexity of the formal models used to study fertility in the research institutes

allowed demographic experts to make arguments that could not be countered effectively by the familist movement (2003a). The most prominent leader of the family associations, Boverat, had been involved in the dissemination of demographic knowledge in the interwar period: he was author of a chapter on the consequences of population decline in an introductory text on the French demographic situation for a general audience (Huber *et al.* 1937). After the war, however, he found himself out of his depth, admitting in a letter to the Secretary of the French High Committee (FHC) that the work of the INED researchers was beyond him: “Their graphs which seem very simple to them are often very difficult to understand for non-initiates” (cited in Rosental 2003a:164).

Boverat’s exclusion and relative loss of stature were made painfully clear in a 1954 dispute over population projections for a demographic report that the government requested from INED (Haut Comité de la Population 1955). Sauvy favored one set of assumptions to be used in making the projections; Boverat thought that those assumptions understated the danger of future population decline, and would harm public support for family policies. Boverat wrote a series of letters to the FHC secretary, in which he expressed, in increasingly urgent terms, his concerns about the projections. In the end, however, Sauvy’s projections remained in the report and Boverat resigned from the project, giving Sauvy a clear victory over Boverat (Rosental 2003a:165). Although both were pronatalists, Sauvy’s belief that recent increases in birthrates should be reflected in the new projections conflicted in this case with Boverat’s sole focus on advocacy: Boverat did not argue that Sauvy’s projections were inaccurate, but that they would be politically damaging. As Rosental points out, it was Sauvy’s position at INED that allowed him to prevail in the conflict with Boverat. More generally, this position allowed Sauvy set the terms of his research, such as the assumptions used to make population projections, unlike his work in

the interwar period, where he was commissioned to produce projections following the assumptions chosen by the funders, including Boverat's organization (Rosental 2003a:165).

The professional demographic researchers at INED and INSEE thus benefited from the institutional reconfiguration of the postwar period. They became responsible for the official population projections of the postwar period. As I will show, their choices about how to produce and present their projections shaped possibilities for public debate about population and birthrates in France.

In contrast to the French case, after World War II, British academic demographers were still left without an institutional home. The temporary status of the British Royal Commission (BRC), which, unlike the FHC, ceased to exist after publishing its final report, combined with the postwar decline of the eugenics movement (Soloway 1990, ch. 14), left academic demographers with, at best, positions that were scattered across departments and disciplines at various universities. There had been some discussion during the BRC's work about founding a state research institute for the study of demography, similar to INED, but no serious attempts in this direction seem to have been made (Royal Commission on Population 1950:25). Nor did British demographers receive funding from major foundations or the government for population study centers in universities at this time, as demographers in the postwar United States did. Thus the British demographers remained in a much more tenuous institutional position than their French counterparts, even after the Second World War. They lacked both the autonomy to allocate funds for research to projects of their choosing, and an institutional platform to place their work in the public eye. In the absence of a strong institutional home of their own, some demographers pursued research collaborations with other institutions: David Glass, after becoming chair in Demography at LSE in 1945, carried out a series of studies in partnership with

the Ministry of Health and the Ministry of Labor, as well as continuing his work with the Population Investigation Committee.

3.2.1 Organizational Position and Production of Projections

As a result of their institutional position and resources, demographers at state research institutes in France were able to make prominent contributions to public debates over fertility trends and population growth, including the production of population projections themselves. Projections were made by researchers at INSEE and INED: INSEE published all of the French projections made after 1950 (INED published the 1950 projections), but there was a great deal of overlap between the two organizations. Sauvy was a member of INSEE, even while he was director of INED, and the authors of the INSEE projections included two demographers who later became directors of INED, Jean Bourgeois-Pichat and Gérard Calot.

In Britain, in contrast, demographers remained largely isolated from their colleagues. They did not enjoy the same autonomy or the same prominence in the public sphere that French demographers attained. Government officials, the actuaries and medical statisticians at the General Register Office (GRO), retained responsibility for making national population projections. Although they eventually came to adopt cohort component analysis, the GRO's use of fixed numbers of annual births in its early postwar projections (see n. 1, this chapter), highlights their disciplinary distance from the academic demographers: cohort component analysis had already become the international standard by that time (Gans 1999), and the British population commission had introduced the method to British demographers and government officials alike through the work of its Statistics Committee (Grebenik 1991). It should also be noted that, as described in Chapter 2, the government officials at the GRO had historically supported the view that concern over British fertility decline was exaggerated and unwarranted.

3.3 How Are Projections Made?

Did the fact that projections were the responsibility of different kinds of organizational actors in Britain and France result in any differences in the projections themselves in the two countries? In this section, I compare the methods used to produce population projections in each country. Although the basic method used was quite similar for most of this period, there are some differences in the ways that projections were made that, as section 3.4 will show, have important consequences for the content of the projections themselves. Here I ask *how* the institutional actors producing official population projections in these two countries made their projections. The demographic methods used to make the French and the British projections were quite similar: both used cohort component methods. Despite this similarity, and despite the similarity of actual period birth rates in the two countries, there are some notable differences between British and French Projections: the *number of variants* produced for a projection, and the assumptions made about future fertility levels. In this section I examine cross-national differences in the use of multiple variants, discuss possible sources of these differences, and describe how they facilitate different understandings of the demographic future in each country. A later section addresses differences in assumptions about future fertility.

3.3.1 Single vs. Multiple Variants and the Meaning of Projections

There is a clear difference between the two countries in their use of variants in population projections. In Great Britain, until the mid-1970s, only a single variant was produced in each yearly projection: one hypothesis for the course of future mortality, one hypothesis for the course of future fertility, and one hypothesis for the course of future migration were selected, and then applied to make a single projection of the total future population. Even when variations on these hypotheses began to be calculated, they were published separately at first (*e.g.*, OPCS 1974),

then confined to the final chapter of the publication, separate from the main results. The introductions for projections with variants even include a cautionary note that “these additional projections are not put forward with the intention that users should select the projection which conforms most closely to their own beliefs about the future; *the principal projection should remain the focus of consideration* for planning purposes, with the variants providing some measure of the uncertainties present” (emphasis added) (OPCS 1987:21).

In contrast, each time French projections were made, they were published as a set of variants, constructed from multiple hypotheses. Hypotheses about migration and mortality sometimes varied, but most of the variants resulted from the use of multiple fertility hypotheses (Table 3.1). Notably, in all but two of the projections, no central projection existed. Rather, there were a “low variant” and a “high variant,” based on low or high fertility assumptions. The implications of this feature will be discussed later in the chapter. (The 1950 projection had too many variants to include in the table, but its central variant will be used in further analyses.)

Table 3.1: Variants of French Projections, 1963-1990

Year	Total variants	Fertility variants					Migration	Other variants
		High	Low	Central	Very High	Very Low		
1963	6	X	X	X			No	With constant mortality
1968	2	X	X				No	
1970	4	X	X				As a variant (through 1986)	
1975	4	X	X		X	X	No	
1985	6	X	X		X	X	Until 2000	With lower mortality
1990	5	X	X	X			As a variant (+50,000/year)	Constant mortality

Why do the British and French approaches to variants differ in this way? The reasons for these decisions are not made clear in the materials accompanying the projections: the British materials express concern that the single variant may produce a false appearance of certainty, noting that the creation of a single variant “has led some commentators to conclude that the projection is a ‘forecast’ or ‘prediction,’” but argue that, nonetheless, “it has been considered more suitable to produce a single ‘official’ set of projections for common use to provide consistency between the many users of the projections” (OPCS 1977:1). When multiple variants are used, they are described as a way of addressing concerns about the appearance of certainty. By 1991, the section on the projection variants has even been renamed from “Variants” to “Uncertainty of Population Projections.” In this section, variants are described as one of “a number of possible ways of indicating the inherent uncertainty in making population projections” (OPCS 1993:27). The British publications thus present variants of population projections as a way to emphasize the uncertainty around the central projection, rather than as alternate, valid possibilities for the future.

The French official explanations for the choice to present multiple variants are similarly vague. They also mention uncertainty as a reason to use multiple variants, but differ from the British accounts by treating variants as distinct possible future trajectories, rather than simply as reminders of uncertainty, as in the British case. The introduction to the 1968 French projections cites uncertainty about the future trend of fertility, due to recent large changes in birthrates, as a justification for providing two sets of assumptions about future fertility, a high and a low variant (Calot et al. 1970:13). The 1985 projections note that “among the factors driving the future of the population, the most uncertain is fertility. Therefore, four hypotheses of the evolution of fertility are considered, in order to cover a large range of possibilities” (Dinh and Labat 1986:9).

These different approaches to variants of projections may reflect different understandings of statistical representation of social phenomena in each country. The British single-variant approach is consistent with an approach described by Schweber as representing a British “national style” of statistical reasoning in the late nineteenth century, characterized by the use of “fabricated, constructed ... statistical indices” for pragmatic applications. Schweber contrasts this style to a French tradition that is deeply skeptical of statistical entities that do not represent an actual social group (2006:195). A French view of variants as reflections of a social reality (if only a potential reality), would resonate with the latter “realist” tradition, while a British use of variants as constructions primarily used to assist in the interpretation of a central variant would resonate with the “constructed” approach. A similar distinction has also been made by Desrosières between “two tendencies in the use and interpretation of social statistics...[one that] argues about groups conceived as totalities endowed with collective traits,” and another “intent on describing the distributions of individual traits [that] refuses to grant a group a status distinct from the conjunction of individuals that compose it” (1998:43). Again, the first tendency, which Desrosières notes arises from a tradition following Quetelet and Durkheim (Belgian and French, respectively), conceives of statistics as representations of social realities, while the second tendency, from a tradition following the British statisticians Galton and Pearson, accepts the constructed nature of statistics. In this sense, multiple variants in the French projections could reflect unease with a single-variant projection as inadequate to represent possible future social realities, similar to the French view of the British use of a single IQ score or measure of social status as an inadequate representation of social reality, as described in Chapter 2).

Although the reasons for the use of single or multiple variants are difficult to identify definitively, the *implications* of this difference are clearer. In the British case, as the authors

note, the use of a single variant creates the impression of certainty about future population trends. In fact, the continued presentation of a single “central variant” in the main body of the British publications hides the contingency of the assumptions behind the projection, acting as a form of “uncertainty absorption” (March and Simon 1958, cited in Espeland and Stevens 2008). In the French case, in contrast, the inclusion of multiple variants in the main publication of the projections highlights the contingency of the projections by making the consideration of other possibilities unavoidable: the audience is literally shown multiple visions of the future, as the publications include graphs with multiple lines illustrating different possibilities for the future size of the population. In fact, as noted above, in the majority of the French projections there is no central variant at all: there are at least two possibilities (the high and low variants) rather than a single “most likely” central variant, making it impossible to represent the projections accurately with a simplification to a single variant. This structure is a particularly strong reminder of the contingency of projections.

Another aspect of the multiple variants in the French projections that has implications for interpretation is the presentation of separate variants with and without migration in certain years. In 1963 and 1970, separate projections are published for each of the main variants, showing each with and without migration. There may have been some pragmatic reasons for this feature: in 1970, the authors note that the migration figures were provided by a separate agency, the Commission of Employment and the Labor Force for the Sixth Plan (Hémery et al. 1973:15). However, publishing separate projections with and without immigration also has symbolic weight. By, in effect, keeping two sets of books, the authors highlight how much of the projected total population in these two sets of projections is due to high migration, rather than so-called “natural increase”—births and deaths among the native-born population. Publishing both of these

versions serves to maintain a division between immigrants and their descendants (since the models without immigration do not, of course, include projected births to immigrants) and the rest of the population of France. In Espeland and Stevens's terms, the publication of these separate projections serves to "reinforce the categories used to conceive of human beings" (2008:412). In later French projections, separate variants without migration are not published, but projected migration is much lower: while projected net migration varied from 125,000 to 210,000 annually in the 1963 and 1970 projections, it was assumed to be zero in the 1975 and 1985 projections, and only 50,000 annually in the 1990 projections.

3.4 How Do Projections Differ?

Given the similarities in national birthrates during this period and in the methods used to produce projections, did the subjective process of making projections result in quantitatively different projections in the two countries? As the previous section showed, the makers of population projections in Britain and France used the same technical tools to produce projections, but used them somewhat differently. This section evaluates the resulting differences in the population projections themselves: by comparing the projections of future populations made in Britain and France at the same times, this analysis shows that there are tangible, quantifiable differences in the projections that resulted from these different approaches. The analysis uses the rate of growth implied by the projections, comparing the error in the rate of growth that resulted from each set of predictions.

3.4.1 Data

This analysis uses French projections published by the National Institute of Statistics and Economic Studies (INSEE), and British projections prepared by the Government Actuary's Department (GAD) of the United Kingdom and published by the Office of Population Censuses

and Surveys. While the British projections were produced every year at first, and then every other year, the French projections are produced between 5 and 10 years apart. Projections for the two countries are compared for all existing French projections except one.⁶ The British projections used for comparison are from the same year whenever possible; of the six observations examined, there are two cases in which other nearby years must be used. The time points covered by this analysis are thus 1950-55, 1963, 1970, 1975, 1985, and 1989-91.

The main source of data for England and Wales is the database of population projections maintained by the GAD, which created the projections from 1954 to 2006 (they are now created by the Office of National Statistics). Starting with the 1971 projections, complete information is given on the numbers of births, deaths, and migrants used to project total population size, along with the total fertility rate (TFR) implied by the projections. For years before 1971, only total population projections are provided in the database. For these years, information on the projected number of births and deaths used to calculate projected total population is taken from the *Registrar General's Quarterly Return for England and Wales* and the annual *Registrar General's Statistical Review of England and Wales*.

Another source of data for England and Wales is the mid-year population estimates for the twentieth century, available in electronic form from the Office for National Statistics upon request, or in the *Statistical Review*. Vital statistics records of the yearly number of births and deaths recorded in England and Wales are available online from the Office of National Statistics (ONS 2011).

⁶ Projections for 1968 also exist, but are not included here since they are very similar to the 1970 projections. The 1970 projections retain the assumptions of 1968 and merely adjust the size of the initial population on which the projections are based. The 1968 version does not include variants with migration, since migration projections were not yet available.

Data for the French projections, produced every five to ten years, are taken from selected volumes in the series *Les Collections de l'INSEE*. These volumes contain total population projections and the assumptions used for fertility, mortality, and migration used to make the projections. For the first time period, the French data come from a 1953 article by Jean Bourgeois-Pichat, published in the French demography journal *Population*, which compares population projections for several European countries. The authors of the INSEE projections include Gerard Calot, who, like Bourgeois-Pichat, was a director of INED after Sauvy's tenure had ended. The authors whose names appear last on one projection became, over time, the first authors of later projections, indicating a great deal of continuity in the personnel making these projections. Data on actual population size and fertility rates for France were obtained from INSEE's online database (INSEE 2012). Appendix C contains a complete list of sources for the projections used in the analysis.

3.4.2 Evaluating Projections: Error in Growth Rates

In order to compare projections for populations of different sizes, I calculated the rate of growth for the projected total population for each year included in the projection, using the standard formula for the growth rate r (Equation 3.1):

$$r = [\ln (P(t_1)) - \ln (P(t_0))] / (t_1 - t_0) \quad (3.1)$$

where $P(t)$ is total population size at time t , t_0 is the base year of the projection, and t_1 is the year for which the total population size is being projected.

The results of these calculations are shown in Figure 3.1 (at the end of this chapter). There is one graph for each set of projections being compared. Each graph shows the main variants published for that year. In some cases, where the years do not match exactly, multiple years are compared. In most years, there is no central French variant, so the low and high

variants are shown instead. In addition, French projections for 1963 and 1970 have separate variants with and without migration. (Multiple variants will be discussed further in the next section.) In addition to the projected rates of growth, actual rates of growth for each country are shown as black dotted lines. In this figure, a positive value indicates that the total population size that year is greater than it was in the base year. A negative value indicates a projection of population decline relative to the base year. A downward sloping line indicates that the population is growing, but that its growth is slowing over time.

Figure 3.1 indicates that most variants project futures of population growth. After 1970, however, the French projections all include a low variant that shows an end to population growth, with the growth rate reaching zero or below. This inclusion in the French projections of an expectation of an end to growth within the foreseeable (or at least project-able) future is an important difference between the French and British projections, which will be discussed further below.

The graphs also show that French projected growth rates were higher than the British rates, but that the actual growth of the French population was also higher than that of Britain. To make this relationship clearer, Figure 3.2 (at the end of this chapter) shows the error in the projected rate of growth for each year of each variant of each projection, which was calculated using the formula given in Equation 3.2, following Grummer-Strawn and Espenshade (1991):

$$r_{error} = [1/(t_1 - t_0)] * [\ln ([P_{proj}(t_1) * P_{actual}(t_0)] / [P_{proj}(t_0) * P_{actual}(t_1)])] \quad (3.2)$$

Each graph in Figure 3.2 shows the error in the growth rate for each variant in a given set of projections. Here, negative values indicate under-prediction of growth, where actual growth rates exceeded projected growth rates, and positive values indicate over-prediction. The value zero, of course, indicates no error at all—complete accuracy. Figure 3.2 reveals a pattern of three

distinct periods in these projections. In the first period, in the early 1950s, projections in both countries under-predict population growth. Much of this error was caused by under-prediction of births: the postwar baby boom was not anticipated in these projections, which instead assumed a return to the low birthrates of the early 1940s. The 1950s graph also shows that British projections were closer to correct—they under-predicted by less—than the French projection during this period. Comparison with Figure 3.1 shows, however, that this is not because the projected higher growth rates were higher than the French. Rather, the French projected higher growth rates, but because their *actual* growth rates were higher than the British rates, their error was greater.

In the second period (1963-1971), projections for both countries over-predict total population, partly because of a failure to anticipate the end of the baby boom. Here the patterns of errors are very similar for both the British projections and the French variants that include migration: they increasingly over-predict population growth over time.

The third period, starting in 1975, represents a time of great uncertainty about future trends in fertility. Fertility rates and birthrates had been falling since the early 1960s, and several paths were possible: fertility might rise again to earlier levels, it might continue to fall, or it might remain stable at its current level. Here the projections in both countries are closer to predicting total population accurately. The British projections and the high variants of the French projections are much closer to accuracy, while the low French variants tend to under-predict population growth.

3.5 Assumptions about Future Fertility

As noted earlier, fertility rates are usually the most important element of population projections for determining the long-term trends in population. This section examines how

predicted trajectories of fertility levels (measured by TFR) compare to the observed trajectory of fertility, in order to better understand how fertility assumptions contribute to errors in total population projections. Since complete information on fertility assumptions is not available in terms of TFR for the earlier projections, the analysis starts in 1970.⁷ Figure 3.3 shows the error in projected values (the difference between assumed and observed fertility rates) by year; again, negative values indicate under-prediction of TFR and positive values represent over-prediction. As this figure shows, TFR was often over-predicted, sometimes by quite a bit. In the 1970-71 projections, the fertility assumptions miss the mark by approximately 0.8. This is a huge error, since total TFR during this period ranged between 2 and 3. The British projections, as well as the French high variants, consistently relied on assumptions about fertility that were above actual levels. The French low variants, on the other hand, often started out above actual levels, but then under-predicted fertility in the later years of the projections.

These graphs highlight an important feature of the error in the projected growth rate shown in Figure 3.2: in 1975 and 1985, even projections that over-predicted fertility levels by quite a bit only led to a slight over-prediction in the growth of the population as a whole. In this case, over-prediction of fertility was balanced by under-prediction of migration, as well as (to a lesser extent) over-prediction of mortality.

In order to learn more precisely to what extent the differences in the British and French projections are due to differences in assumptions about fertility, rather than mortality or migration, for the 1975 projection I compared the British projections using an assumption that TFR would stabilize at 2.1 to variants that relied on a lower fertility assumptions, with TFR reaching a stable level of 1.8, comparable to the French low variant. I first replicated the British

⁷ The British projections for 1970 do not include information on TFR, so the 1971 British projection has been used as the comparison for this analysis.

projection without migration, then repeated the projection using different fertility assumptions. Migration is disregarded because details of the age structure of migration were not published, so replication with migration is not possible. The replication shows that only extremely minor differences result from assuming no migration—the official projection assumed low levels of emigration for most of this period.

For the replication, I used single-year age groups by sex, and applied the published 5-year mortality rates to the surrounding 5-year age intervals (e.g., the mortality rate for 27-year-olds was used for ages 25-29). Future mortality rates were calculated using the published assumptions for annual improvement in mortality rates by age. For the mortality rates of 1-year-olds, which were not published and are rather different from the rates at older ages, I used the rates from the actual period lifetable from 1975 (ONS 2011), since the rates for infant mortality and two-year-olds' mortality matched closely to the published assumptions for those ages. The mortality rate assumed for the oldest age category, ages 85 and over, was calculated using the published results of the British projections and an assumption of no migration at those ages, then working backwards to find the rate used to make the projections for that age.

The formulas used to calculate the projected population size are found in the publication of the 1975 projections (OPCS 1977:3-4). For each sex, the size of the population P for age x was calculated using Equation 3.3 below, for mortality rates q :

$${}_nP_x = {}_{n-1}P_{x-1} * (1 - {}_{n-1}q_x) \quad (3.3)$$

The number of births in year n was calculated with Equation 3.4, using ${}_nP_x^F$, the number of women of age x in year n , and the age-specific fertility rate for women age x , $ASFR_x$, where x ranges from 15 to 44:

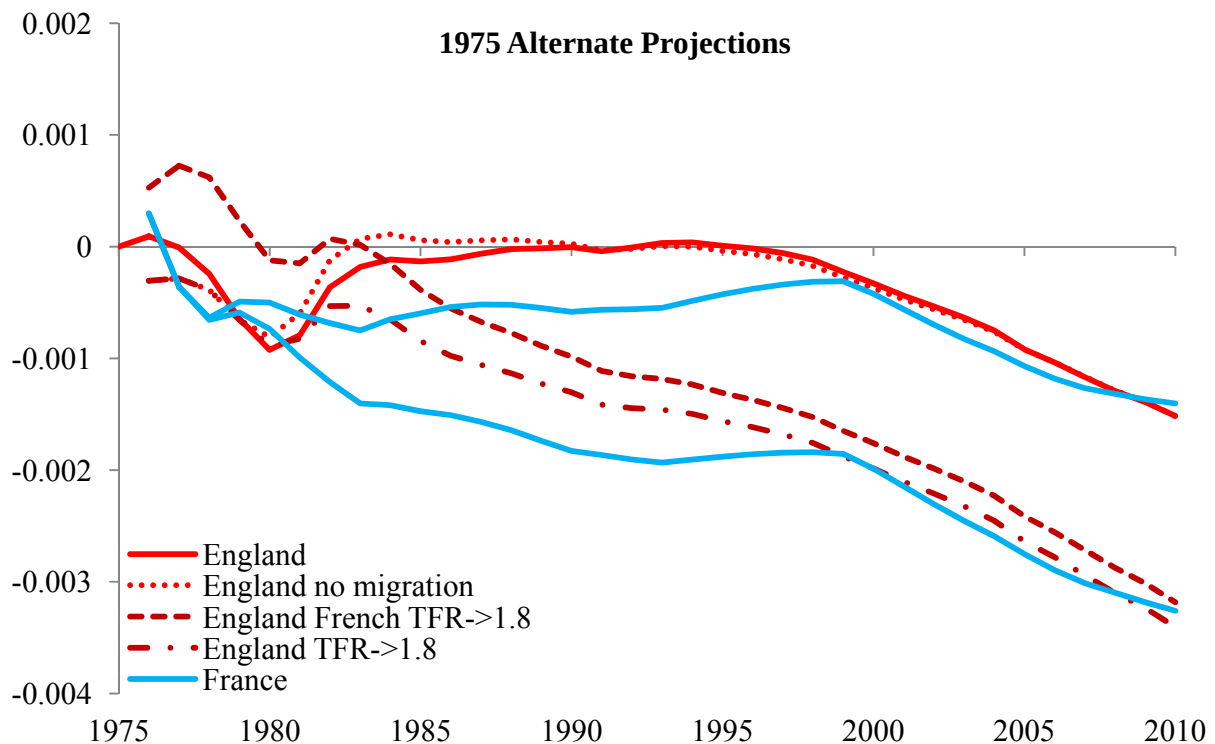
$$B = \Sigma [(1/2) * ({}_{n-1}P_x^F + {}_nP_x^F) * ASFR_x] \quad (3.4)$$

After the births across all ages of women were summed, the published infant mortality rate was applied as in Equation 3.3 to get the number of surviving babies age less than one. The sex ratio of 1.06 males to 1 female was then applied to find the size of this age group by sex.

To replicate the British projections, I used the age-specific fertility rates from the projection publication (since fertility rates were given by calendar year, the mean of two calendar-year rates was taken to obtain each mid-year rate). For the first low-fertility British variant, I changed the fertility assumptions so that fertility was projected to increase at the pace and with the age distribution assumed in the official British projections, but would stop increasing at TFR of 1.8, rather than at TFR of 2.1. For the second low-fertility British variant, I again assumed that fertility would stop increasing when TFR reached 1.8, but used the age distribution and pace of increase of fertility from the low variant of the French projection for 1975. I then calculated the error in the growth rate for these alternate British projections, and compared them to the errors for the original British projection and both variants of the French projection for 1975.

The results of the comparisons of alternate low-fertility British projections for 1975 are shown in Figure 3.4. The red dashed lines, representing the British projections recalculated for a TFR that stabilizes at 1.8, decline more steeply than the official British projection, and by the late 1990s are nearly the same as the French low variant. This analysis shows that in both alternate scenarios in which fertility is assumed to stabilize at a TFR of 1.8, the growth-rate errors that result are virtually identical to the French low-variant errors by the end of the period. This shows that it is indeed different assumptions about *fertility* driving the observed difference in the 1975 projections: if the same fertility assumptions had been used in both countries, their projections would have been quite similar.

Figure 3.4: Error in Growth Rates for Alternate British Fertility Assumptions



These analyses of population projections find real, quantitative differences in the projections made in the two countries, due to different assumptions about future fertility. In the next section, I examine the processes of population projection that contributed to these differences, and the significance of these differences for understandings of future population trends in each country.

3.5.1 Future Fertility: Equilibrium or Continuing Decline?

The analysis now turns to the assumptions used to make projections, in this case assumptions about future fertility. Figure 3.5 shows the fertility rates used to made projections throughout the period in which complete information is available.⁸ For clarity, some of the

⁸ Aggregate TFR for England and Wales is only available for 1971, but comparison of the observed TFR for England, vs. England and Wales, as shown in Figure 3.5, indicates that English

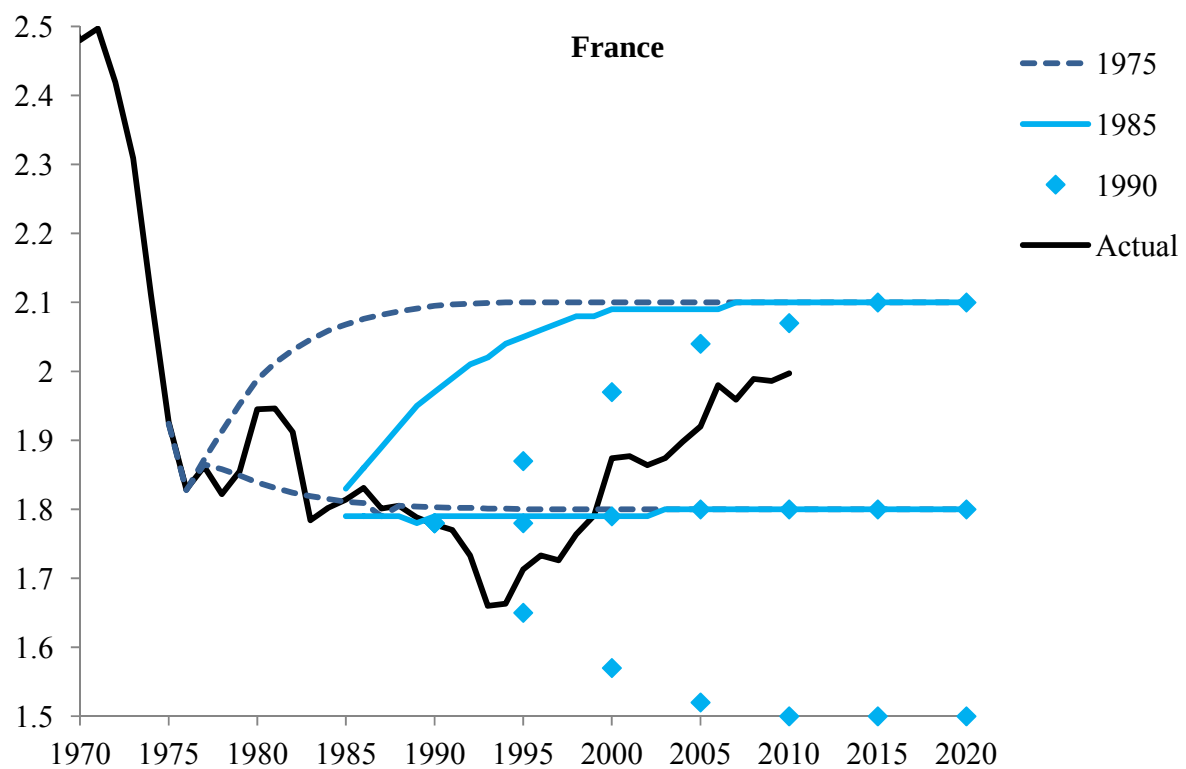
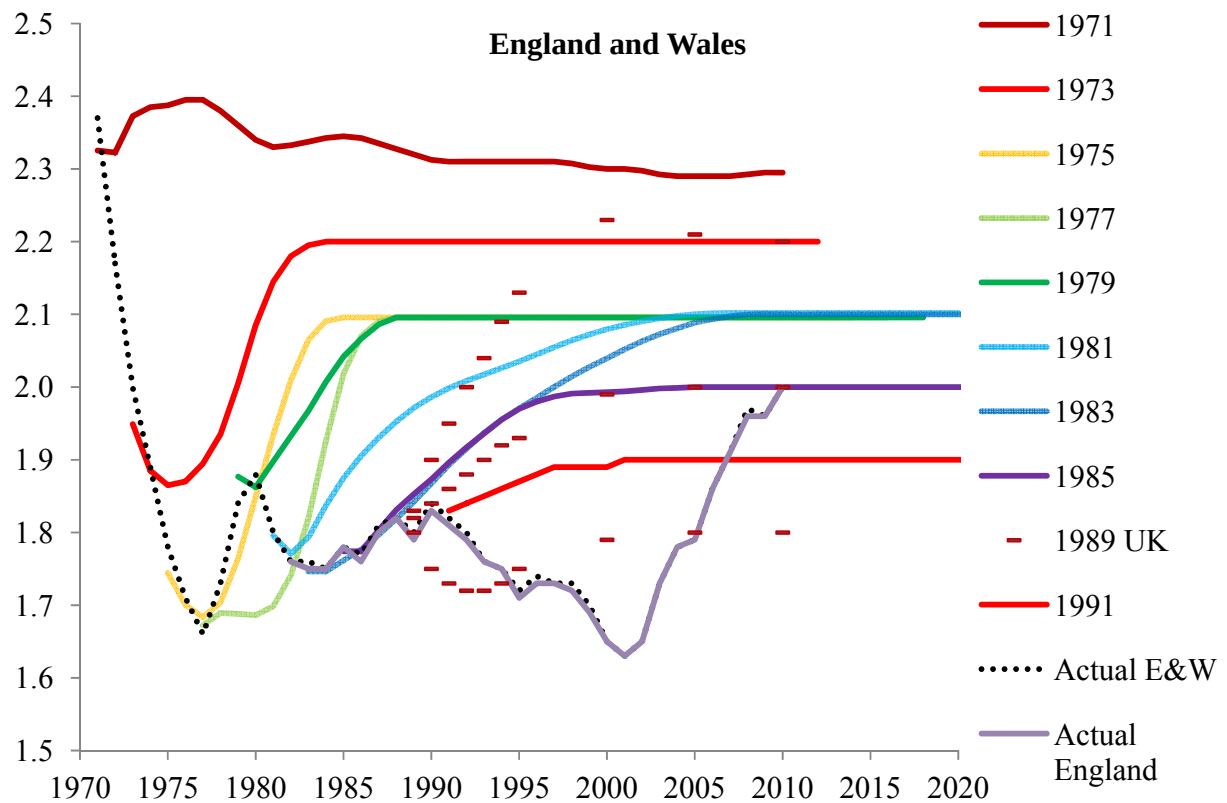
annual British projections have been excluded, and only central variants are displayed when they are available, with the exceptions of the projections for England in 1989 and France in 1990, in which the three main variants have been included for illustrative purposes.

The most striking feature of Figure 3.5 is that the British assumptions uniformly predict that fertility will increase. At every point in time, regardless of the trends of preceding years, the British fertility assumptions show a strong faith that fertility rates will reach *equilibrium at the replacement level* of 2.1 children per woman, or reach a level very near replacement. As late as 1985, when TFR had been below replacement level for over ten years, the main fertility assumption was that TFR would return to, and remain stable at, a near-replacement level of 2.⁹ At *every time* at which projections are made, the British projections assume that fertility rates will rise above their current level, often above the average of the most recent several years. If higher fertility rates were considered desirable, this would be remarkable optimism. In any case, it seems to represent a strong belief, impervious to recent history, that the long-term trend of fertility would be equilibrium at near-replacement levels. I argue that this belief represents a culturally influenced assumption held by the makers of the projections, as it is unaffected by the empirical evidence of the demographic trends of the preceding years. I argue that the intellectual tradition of demographic transition theory exerts this cultural influence on British fertility assumptions, a claim I will discuss in detail below.

TFR dominates the aggregate TFR, since the population of England is so much larger than the population of Wales.)

⁹ It is also noteworthy that, when the British use multiple variants, as in the 1989 projections, the low-variant TFR stabilizes at 1.8 (well above the French 1990 low variant of 1.5), and the high variant is 2.2, above the French 1990 high variant of 2.1 (OPCS 1991, Dinh 1995).

Figure 3.5: Fertility Assumptions, Total Fertility Rate, 1971-1991



Turning to the French assumptions, it is clear that the high variants of fertility assumptions are very similar to the British assumptions: here, too, fertility is expected to reach equilibrium at replacement level. However, each low variant creates a concrete representation of the possibility that fertility rates could *stay below replacement level* over the long term. In the absence of migration, this would eventually result in population decline. In the French case, then, the fertility assumptions represent two possible demographic futures: first, there is an optimistic high variant that represents the possibility of replacement-level fertility that would maintain population size in the long run, without migration; second, a pessimistic low variant represents the possibility of below-replacement fertility leading to eventual population decline without migration. The French projections thus place in front of the public a concrete representation of the possibility of population decline, a concept that is completely absent from all but the last British projections. In the context of public debates over state support for families or state population policy, the French presentation of multiple possible futures could be used as a powerful support for the argument that the demographic future of France faces diverging pathways, and that policy can determine which path will be taken. The British projections, in contrast, would offer no such opportunity to parties that might wish to make a similar argument for intervention.

3.5.2 Why do Fertility Assumptions Differ?

The causes contributing to this difference in fertility assumptions are difficult to pinpoint. As discussed earlier, the authors of the projections offer only sketchy justifications for their choice of fertility assumptions. Certainly, part of the explanation may be found in the resources available to various organizational actors involved in debates over population. The fact that the British projections were produced by a government department that combined a history of

promoting a position of unconcern about low fertility with a great deal of organizational continuity is certainly relevant, as is the fact that the French projections were produced by actors with resources to amplify their positions, and interests in keeping demographic issues at the forefront of public debate. Another key element of the explanation, I argue, is a difference in the intellectual traditions of the demographic experts in these two countries, which is reflected in their underlying beliefs about the long-term trend of fertility. My claim is that the beliefs about future fertility reflected in the assumptions used to make projections can be traced back to the competing theories of demographic transition and demographic revolution described in Chapter 1.

The authors of British projections displayed a stubborn belief that fertility would rise to replacement levels, a faith that remained unshaken by years of below-replacement fertility levels. Demographic transition theory's promise of post-transition stability, with fertility rates reaching equilibrium at replacement level, provides the intellectual framework that anchors this faith. The high variants of the French projections also represent a return to replacement fertility, although often a slower return than that found in the British assumptions; post-transition stability is a possibility in the French projections. However, the low variants of the French projections preserve the vision of long-term fertility decline below replacement presented in Landry's theory of demographic revolution, providing concrete representations of a future in which below-replacement fertility eventually leads to population decline. This view may have been largely forgotten in the rest of the world, but it is not surprising that it was maintained in France, among Landry's colleagues. Landry worked closely with Sauvy at the time of interwar below-replacement fertility, and Sauvy's continuing prominence in the field of demography and the

public sphere would have helped to sustain this perspective during periods of replacement and above-replacement fertility.

3.6 Conclusion

The analysis in this chapter has shown how population projections in Great Britain and France differed, and how their differences contributed to different visions of the demographic future in each country. First, an examination of the processes by which certain organizations came to be the producers of official projections for the state showed that cross-national differences in the organizational positions of demographic experts led to different kinds of actors producing official population projections for the state in different organizational settings. Second, an analysis of the official population projections themselves showed that, although the technical methods used to make them were quite similar, there were in fact significant differences in the projections and in their accuracy. Finally, I examined factors that contributed to differences in population projections by country, and found that differences in the presentation of projections and the assumptions about future fertility that were used to make the projections led to qualitative and quantitative differences. Qualitatively, the use of single-variant projections in Britain facilitated their interpretation as the most likely future, while the multiple variants produced for each French projection emphasized the contingency of the demographic future. Quantitatively, when postwar fertility rates declined below replacement level, British projections assumed fertility levels at or very close to replacement, leading to projections that total population would experience low to moderate growth; the “high” variants in France were similar to the British projections, but were accompanied by more pessimistic “low” variants. The French low variants, which assumed continuing below-replacement fertility, supported expectations of a demographic future of population decline. This possibility was articulated in the French

projections, but was not admitted in the British projections. The differing projections produced in these two countries thus created an opening for the use of official state projections as justifications for concern over population decline in France, but not in Britain.

I argue that this difference in British and French expectations for future fertility, reflected in fertility assumptions that necessarily invoked subjective beliefs about the future of population trends, was influenced by a cultural difference in the intellectual traditions of these two national contexts. The continuing influence in France of the theory of demographic revolution, with its depiction of a population decline that has no foreseeable end, led to assumptions of fertility that stayed below replacement levels, which were then translated into a low variant of population projections that gave concrete, quantified form to a future of population decline. In Britain, however, the dominance of the theory of demographic transition led to a strong assumption that fertility would reach equilibrium at replacement level, regardless of the recent trends observed in fertility rates. By presenting this vision of population as the single official prediction for the future, the British projections left no space in which their projections could be used to support concerns over population decline.

This chapter has presented one case in which differences in institutional and intellectual configurations resulted in differing understandings of the meaning of population and fertility trends in postwar Great Britain and France. Through the process of quantification, population projections throughout the postwar twentieth century translated similar recent pasts of fertility trends into very different visions of the national demographic future in each country. My analysis has shown how institutional, methodological, and cultural mechanisms led to these different interpretations.

Figure 3.1a: Actual vs. Projected Growth Rates

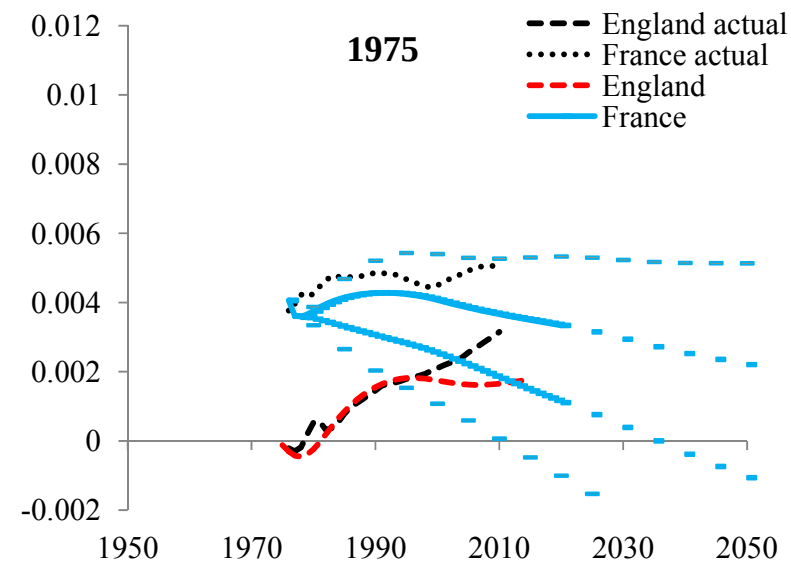
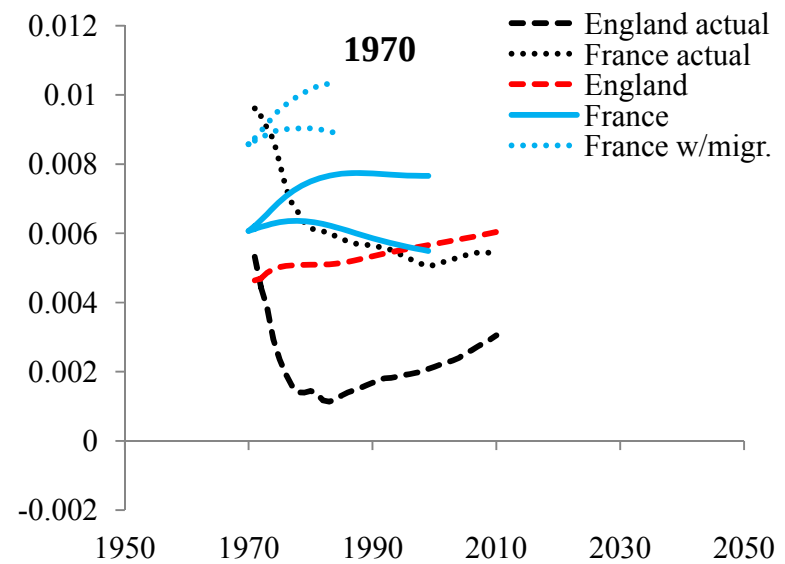
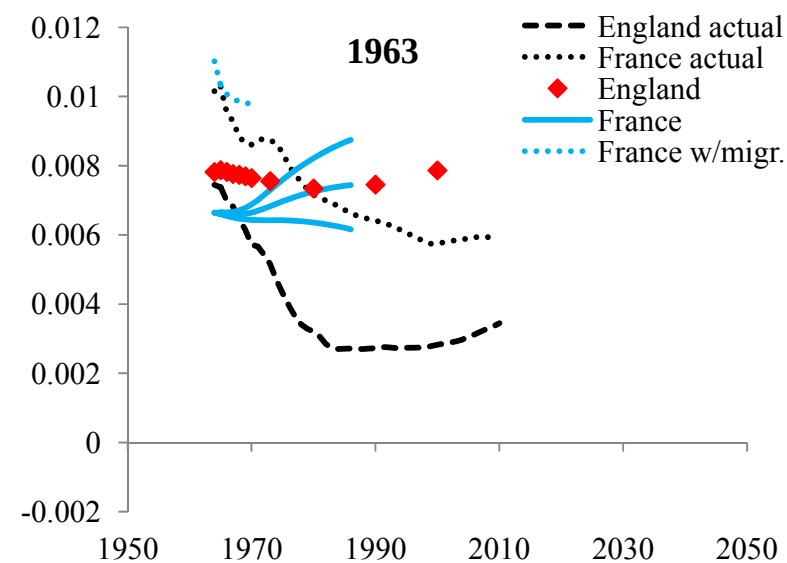
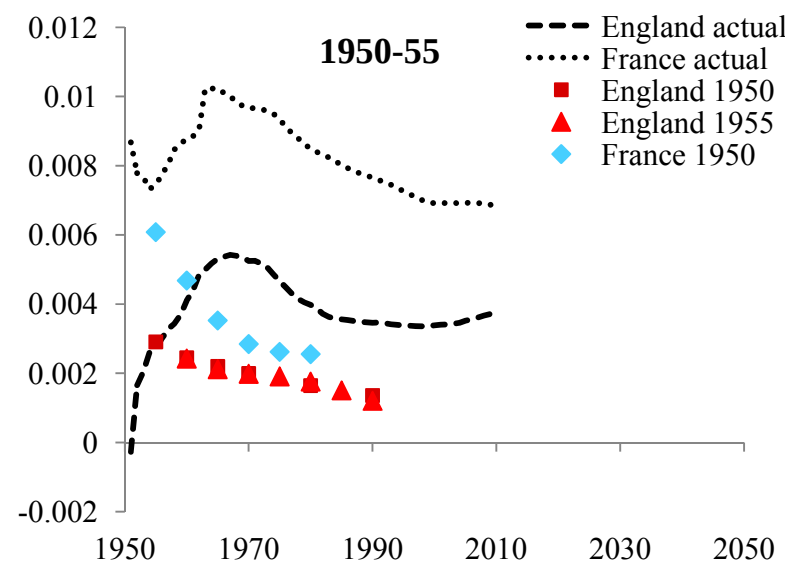


Figure 3.1b: Actual vs. Projected Growth Rates

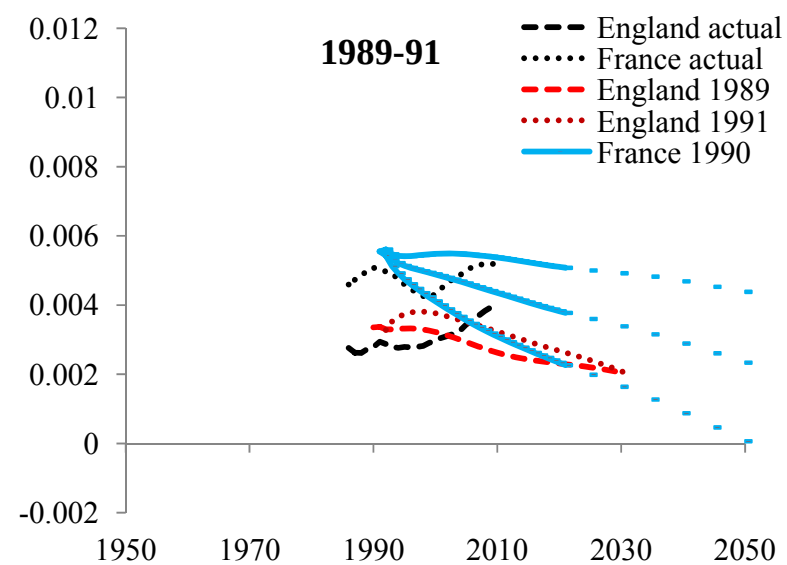
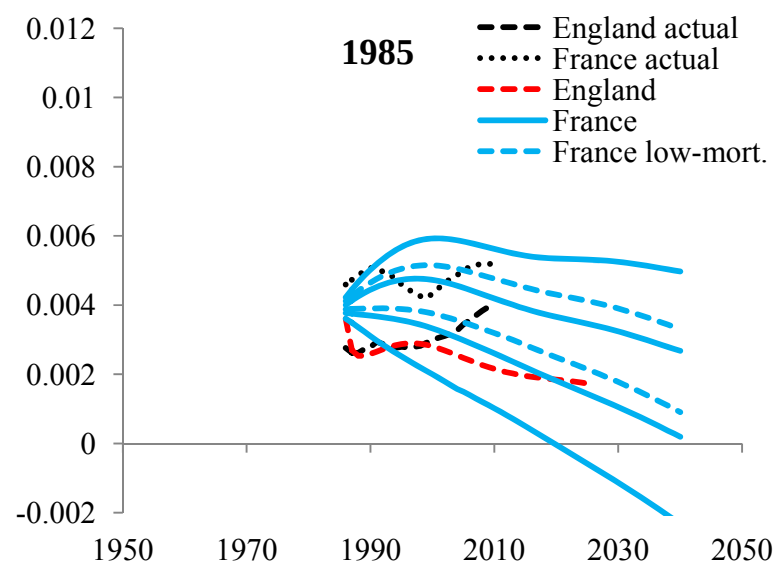


Figure 3.2a: Error in Predicted Growth Rates

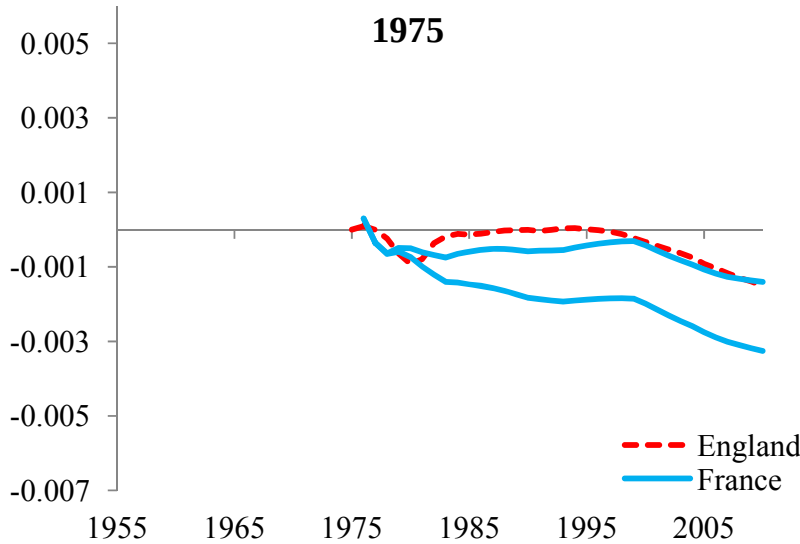
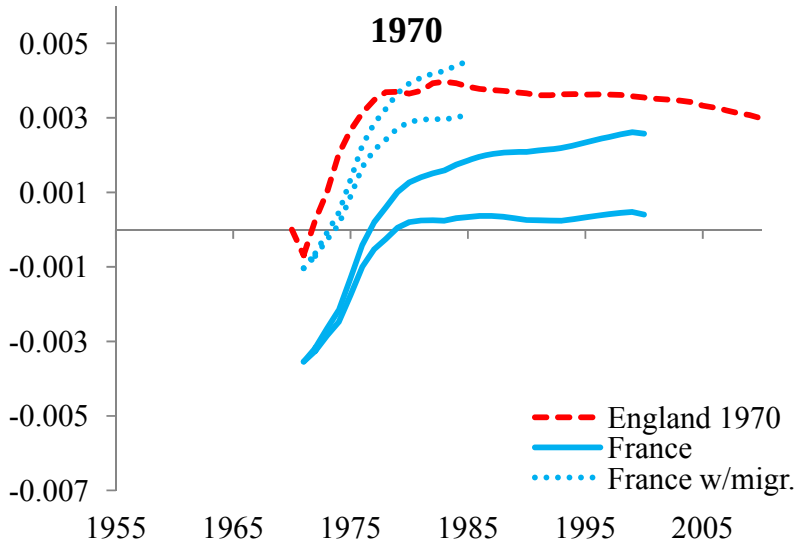
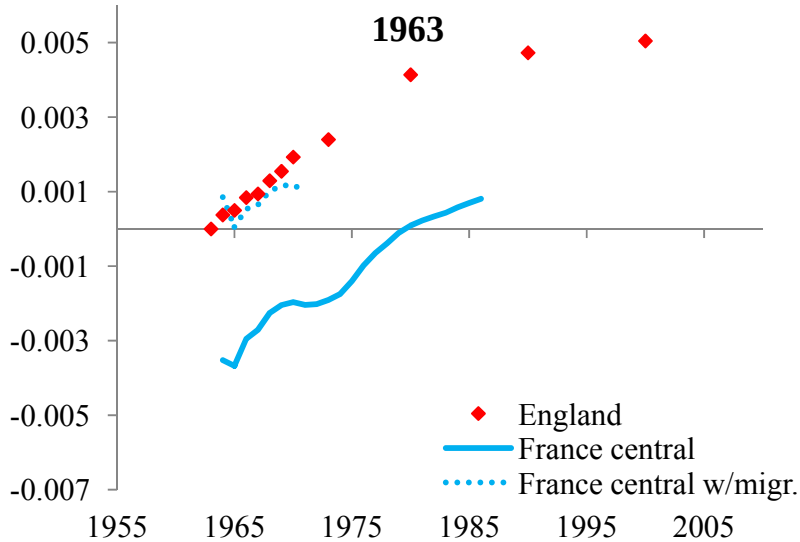
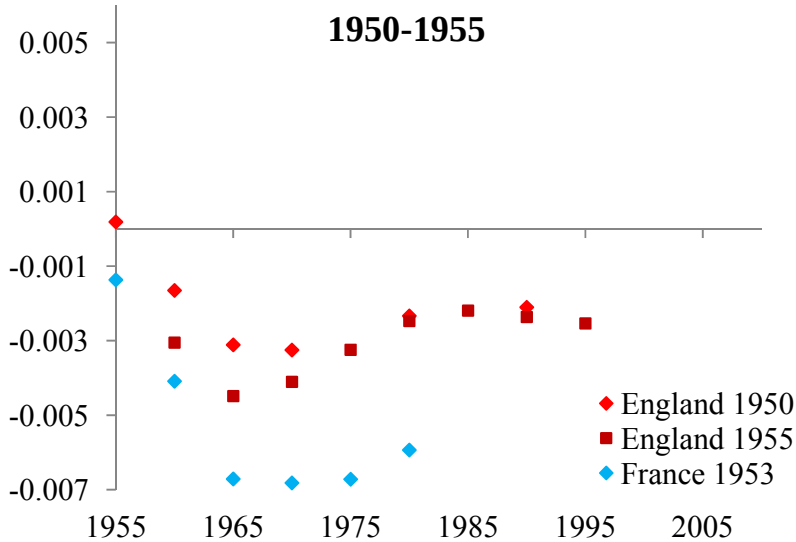


Figure 3.2b: Error in Predicted Growth Rates

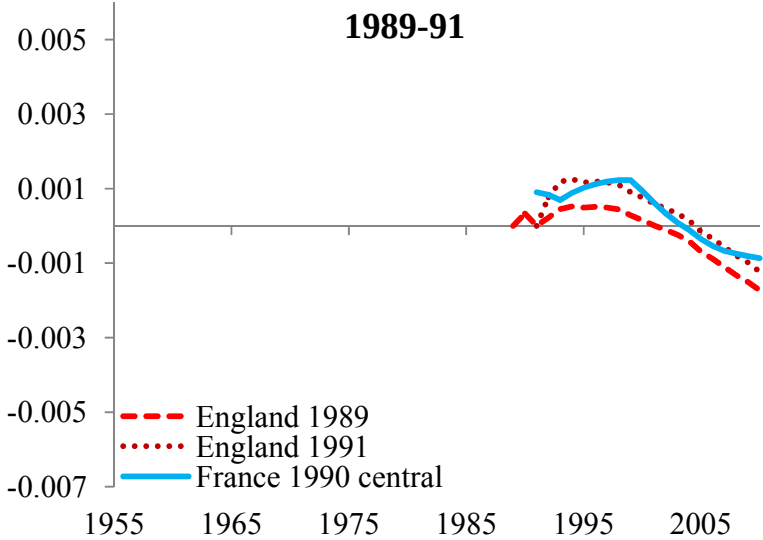
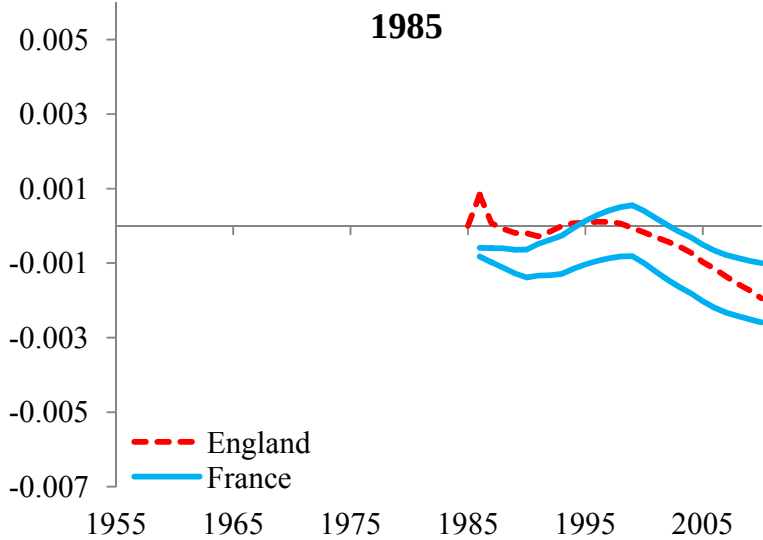
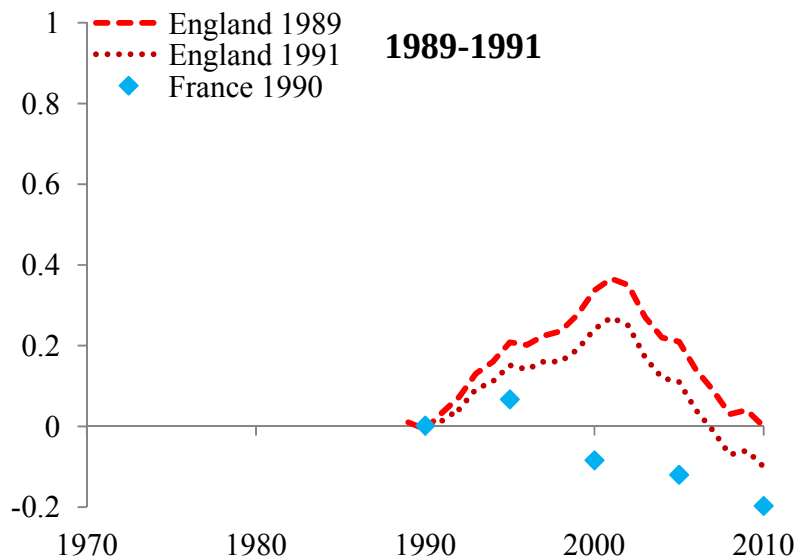
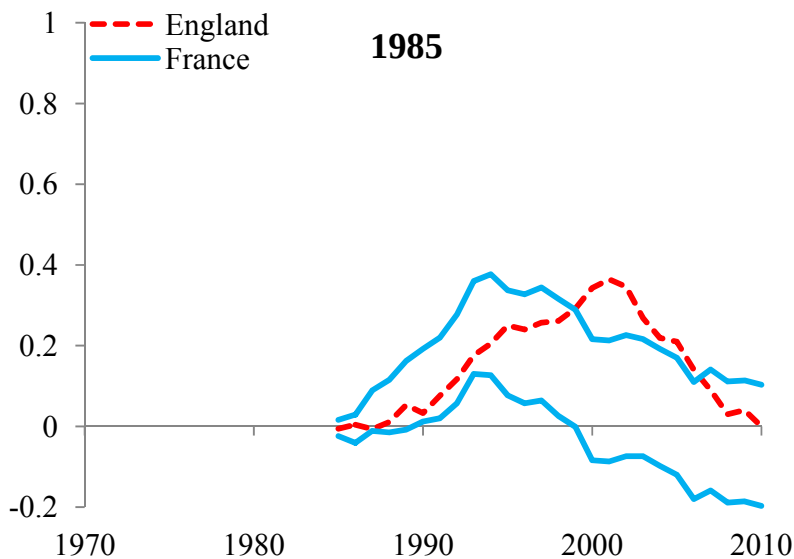
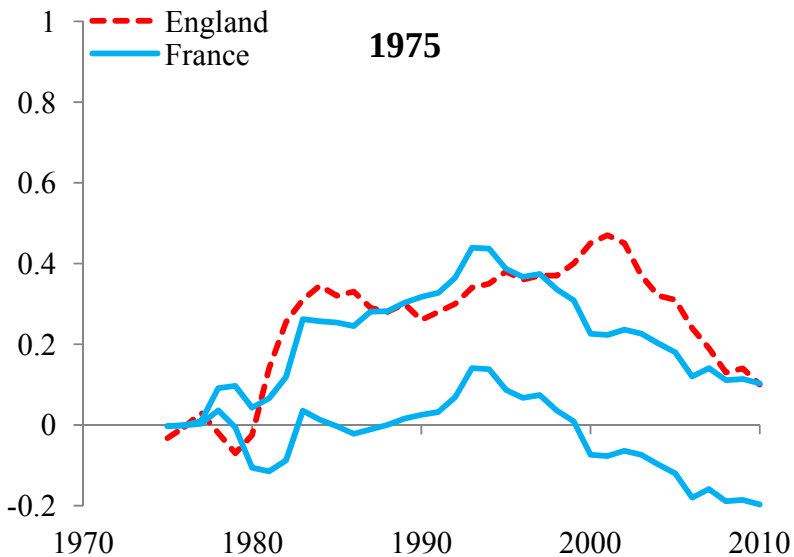
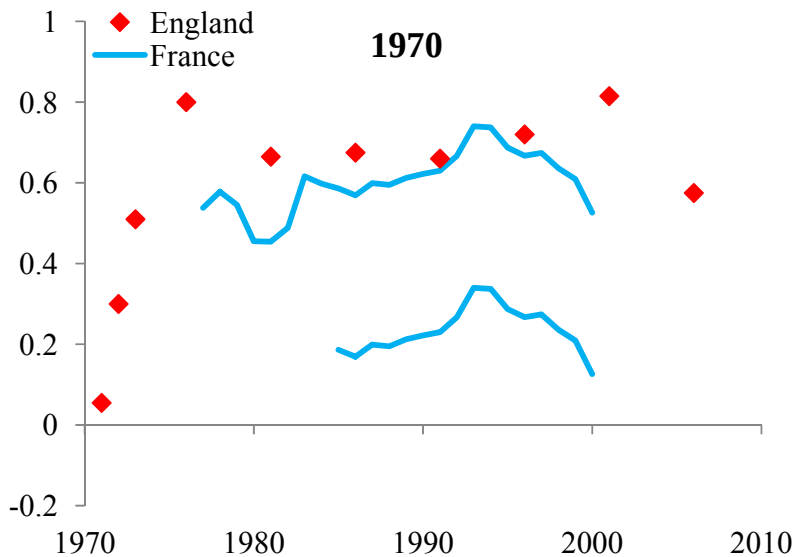


Figure 3.3: Error in Fertility Assumptions



CHAPTER 4: Population Problems in Academic and Mass-Media Publications

The previous two chapters examined spheres in which demographic analysis was deployed for explicitly policy-relevant purposes: state commissions on population, and national population projections produced by state agencies. In these contexts, demographic experts produced and presented analyses for broader policy audiences. The analysis in this chapter, in contrast, focuses mainly on a sphere in which demographic experts select their own work for an audience of their peers: academic journals of demography. I examine the research agendas represented in academic studies of fertility published in demography journals in Great Britain and France over the course of the sixty years following the end of World War II. I then compare the academic publications to newspaper coverage of fertility and population, focusing on the British case. Academic journals, like the official statistics discussed in the previous chapter, are an important realm in which demographic knowledge is constructed by experts. Unlike official statistics, however, access to this realm is controlled solely by other experts in the field, through peer review and editorial decisions. The contents of academic journals thus reflect the priorities of academic experts themselves.

My analysis compares the themes, or topics, that were the focus of demographic research on fertility in these two countries. By comparing the content of academic studies of fertility, I will show that different understandings of fertility trends in these two countries were not only produced by differences in demographic experts' institutional positions that affected their ability to share their views with wider publics. They were also produced by actual differences in the kinds of work done by demographers themselves. Additional analyses of the British case, comparing the themes found in academic publications to the themes found in mass-media coverage of demographic issues in that country, will show how academic research agendas in

Great Britain were or were not linked to the demographic concerns represented in publications for a broader audience.

In this study, I argue that it is not merely the case that French demographers were better positioned to disseminate demographic knowledge, due to their institutional advantage, but that *the kinds of demographic knowledge produced by academic experts in these two countries differed* as a result of their different approaches to the study of fertility trends. The different intellectual traditions described in the previous chapter—the dominance of the theory of demographic *transition* in Britain, and its coexistence with the theory of demographic *revolution* in France—led researchers to different understandings of relevant objects of inquiry for studies of fertility. Specifically, where demographic transition theory reigned supreme, low-fertility contexts were seen as having “completed the transition”: their demographic situation was therefore understood to be a stable future at an equilibrium with low mortality and near-replacement fertility. I argue that as a result of this understanding, fertility in “post-transition” societies was not taken as an important or interesting object of inquiry. Therefore, greater attention was given to contexts in which the process of transition was taking place, or had yet to take place. In some cases, attention was also given to histories that investigated the process of transition in places where it had occurred years before.

In contrast, in places and at times where replacement fertility and stable population were *not* considered the universal, inevitable outcome of fertility decline, populations in which fertility was no longer above replacement were also considered a worthy object of demographic study. In this case, researchers believed there were still things to be learned about their demographic present and uncertain future. As I will show, this was the case in France throughout the period under study, and was only the case in Britain at the beginning and end of this period, when long-

term fertility declines below replacement spurred consideration of outcomes of fertility decline other than stable replacement-level fertility.

Of course, demographers' research interests develop within an institutional and organizational context. It would be impossible to fully separate the effects of theoretical influences and organizational contexts on research agendas. The French National Institute for Demographic Studies (INED) continued to play an important role in the development of French demography throughout the period under study. INED's institutional support for the study of French demography, in particular, certainly shaped French research agendas by providing a very direct incentive to conduct demographic research on the French case, which was clearly a "post-transition" context. Since British demographers lacked such institutional support at the national level, their strongest affiliations with organizations for the study of demography were with international organizations. Throughout much of this period, these organizations were concerned mainly with overpopulation, and thus focused most on contexts of above-replacement fertility.

It should be made clear that the goal of this comparison is not to evaluate the relative "agency" of British and French academic demographers, but to understand better what role they played in constructing public discourse about fertility in the postwar twentieth century. Without claiming that concerns about low fertility originated in the minds of these academic experts, this study asks what kinds of messages they delivered about fertility, whatever the original sources of the messages may have been. The comparison with the popular press begins the process of comparing the interpretations of fertility trends that demographers produced with the messages about fertility that reached a larger audience through newspaper coverage of population issues.

4.1 Data

The data used in this study comprise articles related to fertility taken from three types of publications: the British demographic journal *Population Studies*, the French demographic journal *Population*, and a selection of British newspapers. Academic journals are the main source of data, since their contents reflect the field's most clearly self-regulated discourse. Peer-reviewed journals are a forum in which leading academics in the field act as gatekeepers. As editors, they select other academics in the field to evaluate work and approve it for inclusion. Certainly, factors such as research funding will affect the topics of research that appear in these journals, but the editorial process is conducted independently of direct policy imperatives or market pressures. Journals are thus an excellent source of information about the construction of expert knowledge within academic fields. The fertility-related topics studied by experts in this self-regulated sphere of demographic knowledge are compared to the fertility-related topics most salient to the broader public at the end of the chapter, in a brief examination of the relationship between the topics addressed in academic publications and mass-media publications, for the British case.

The British journal *Population Studies*, founded in 1947, was selected for the analysis since it was the first and most prestigious postwar demographic journal published in Great Britain. In fact, until the American journal *Demography* was founded in 1964, *Population Studies* was the most prestigious English-language journal of demography. Prominent British demographer David Glass was the journal's first editor and continued to serve as an editor until 1978. Another former editor, whose work on the publication began at its founding, has described the journal as "representative of the direction of demographic research at the time" (Grebentik 1997:577). A prominent Australian demographer has gone further, claiming that "what [editors

Glass and Grebenik] believed constituted the field came, to a very considerable degree, to be the field” (Caldwell 1996:314). The journal’s prominence has continued to the present day: it was the highest-ranked British journal in the field of demography for the combined period 1981-2008 (Thomson Reuters 2012). The journal *Population* has similarly been the most prominent French demographic journal since its founding in 1946 under its first editor, Alfred Sauvy. The journal is closely tied to INED; the director of INED always also serves as the editor of *Population*. *Population* is the highest-ranked French journal of demography, although its international impact factor has suffered from the language barrier (publication of an English version only began in 2002). For much of the period under study, these were the only general journals in the field of demography in their respective countries.

Articles from these journals were selected by using the Data for Research service of JSTOR, which allows citation information and word counts to be downloaded for large numbers of articles (JSTOR Data for Research 2012). The website’s search feature was used to search each journal for all articles labeled with the keyword *fertility* in English, and either the keyword *fécondité* or the keyword *natalité* in French.¹⁰ This search located 1,623 articles from *Population Studies* and 1,835 articles from *Population* to be used in the analysis. A basic “stemming” algorithm was used to remove the simplest plural forms: words ending with an s had that final s removed if the same word also occurred in the text without the s. Removal of commonly occurring words is recommended to improve the clarity of topic modeling results; the excluded words are called *stopwords*. In each language, a standard list of generic words that occur

¹⁰ The term *fécondité* is the French equivalent of the English term fertility (*not* fecundity) as demographers use it, meaning the number of children actually borne. The term *fertilité* in French is equivalent to the English term fecundity, meaning the biological ability to have children (commonly referred to as “fertility” in everyday English). The French term *natalité* is analogous to, although much more common than, the rarely used English term natality, which means birthrate.

frequently, such as *the* and *a*, was removed from the texts used in the analysis. Then the ten words that occurred most often in each collection of documents, which together accounted for approximately ten percent of the total words, were excluded: *fertility*, *population*, *age*, *birth*, *women*, *rate*, *family*, *year*, *marriage*, and *children* in English; and the French words for *population*, *woman*, *birth*, *rate*, *between*, *country*, *number*, *child*, *marriage*, and *age*.

The newspapers used for this analysis, the *Times* and the *Guardian*, were selected because they were the main “papers of note” in Britain throughout the time period under study. They were also the only British daily papers for which it was possible to search electronically by topic before the 1990s. Unfortunately, no such searchable archives were available for French newspapers. Feature articles, opinion pieces, and letters to the editor were included in the search; advertisements were excluded. Searches used 1945 as the starting point, and ended in 1985, the latest time at which the databases used to conduct the search were available. Since searches on other systems, such as Lexis-Nexus, would not be comparable to the searches made for earlier periods, and since comparisons over time are a central goal of the analysis, other databases were not used.

The online search engine of the *Times* was used to search the keyword terms *population decline*, *fertility*, and *birthrate* (along with *birthrate*, *birth-rate*, and the combination of the terms *birth* and *rate*). An additional search was made for articles labeled with the keyword term *population* whose full text contained terms that began with *birth-* or *bab-*. In cases in which a search returned multiple letters to the editor as a single article, the letters were separated and treated as separate documents. Articles clearly unrelated to the topic, such as those about soil fertility or non-human populations, were excluded. These searches returned a total of 421 articles from the *Times* that were used in the analysis. The *Guardian* was searched using Proquest

Historical Newspapers Online. A search was conducted for articles in which the citation and abstract contained the terms *population decline*, *fertility*, and the various versions of the term *birthrate* described above. Again, multiple letters to the editor were separated into distinct documents and articles on unrelated topics were excluded from the analysis. This search produced 178 articles related to the topic that were used in the analysis, for a total of 599 documents used in the analysis of newspapers.

The articles from the *Times* were available as PDF images online, but could not be copied as text. Since the image quality was too poor to allow scanning the text with optical character recognition, these articles were transcribed to produce plain text documents. The text documents were then transformed into the required format and simple plurals were stemmed. The standard list of frequently appearing words was excluded from the texts. The remaining words did not occur as frequently as the most frequent words in the journal articles: after the standard terms were excluded, only two words averaged more than two occurrences per newspaper article. Therefore, no other words from the newspaper articles were excluded.

4.2 Methods: Topic Modeling

This analysis is conducted by first using correlated topic models to identify themes found in three sets of documents: articles from the French journal *Population*, articles from the British journal *Population Studies*, and articles from British newspapers. The results of the topic modeling analysis are then used in combination with interpretive analysis for a cross-national comparison of the focus of academic demographers' research on fertility in each country. This comparison examines differences in the dominant research themes in each country and changes in the prevalence of these themes over time. The topic modeling results are also used to guide a

comparison of how fertility was addressed in academic and mass-media publications in Great Britain. In this section, I describe the method of topic modeling and its application in this study.

Topic modeling searches for latent structures underlying sets of documents. It identifies topics, or themes, in a set of documents, called a *corpus*. Each topic is characterized by a distribution of words that co-appear across documents in the corpus. The model treats each document as a “bag of words,” meaning that information about the order of words within a document is ignored (Blei 2012:82). Each document is thus a collection of words that represent certain topics. Each topic contains words that are more or less likely to appear as part of that topic; different topics are characterized by different words. For example, a set of articles about schools might include articles that discuss budget issues. These articles are likely to use terms like *cost*, *salary*, and *taxes*. When these three terms appear together in several different articles, the model may identify a topic in which the words *cost*, *salary*, and *taxes* appear with high probability. The researcher could then determine that this topic was related to budget issues; the modeling process does not use any information about the meaning of the words. Articles that talk about school buildings and equipment, on the other hand, are likely to use terms like *facility*, *maintenance*, and *classroom*, so that when these terms co-appear across documents, the model may identify a topic in which they appear with high probability. The model uses the patterns observed in the data to construct the topics. Thus, if articles containing the words related to budgets always included the words related to buildings, too, the model would place all of these words together in a single topic. However, if some articles that discuss budgets also discuss buildings, and some discuss budgets and teachers’ unions, or budgets and curriculum, then the two sets of co-occurring words (the *budget* words and the *buildings* words) could be identified as

belonging to separate topics. Then the content of a document that discusses both issues might be characterized, for example, as 60% from the “budget” topic and 40% from the “buildings” topic.

Each corpus is thus characterized by the model as a distribution of topics across documents, and a distribution of words across topics. The model estimates the distributions that maximize the likelihood of the observed data: the observed distribution of words across documents, or the “bags of words” from the texts being analyzed. Topics can also be thought of as latent variables underlying the observed data. The output of the model can be thought of as the assignment of words from documents to different topics: the model returns a set of topics, each characterized by a list of words and their associated probabilities, along with the proportional representation of topics in each document. Each document may contain multiple topics, and a given word may appear in more than one topic. See Blei (2012) for an accessible explanation of topic modeling; Blei and Lafferty (2009) provides a more technical description of the method.

Topic models are estimated using an iterative procedure that starts from a random seed; because of this, results will vary when trials are repeated, as they do in most clustering methods. Although the results for a given starting point do not vary, and thus the method is fully replicable, a standard method for assessing the reliability of the results across trials with varying random seeds has not yet been developed.

The kind of topic modeling used in this analysis, correlated topic modeling (CTM), differs from the more commonly used Latent Dirichlet Allocation (LDA) in one important respect: rather than assuming that topics are not correlated across documents, as LDA does, CTM assumes correlation among topics and models it, allowing analysis of changes in the relationships among topics over time in the corpus (Blei and Lafferty 2007). CTM is used in this analysis since the assumption of independence is untenable for academic journal articles. Journal

articles often address multiple themes in the literature, and some combinations of themes are certainly more likely to co-occur than others.

Thus far, one common application of topic modeling is to use it to classify a corpus that is otherwise is unlabeled. In one such application, a woman's diary, kept daily for 27 years, is analyzed with each day's entry treated as a document (Blevins 2010). This approach could also be used for a corpus too large for a single individual to read all of the text, such as the complete collection of Harlequin romances. In such cases, the contribution of this method is clear: the contents of a previously incomprehensible corpus are organized in a legible fashion, without the high costs and concerns about replication that conventional content coding methods entail. In other applications, topic modeling has been used to obtain new insights into collections of texts that are already labeled with keywords, such as academic journal publications or newspaper articles from a centralized database (*e.g.*, Blei and Lafferty 2007; Newman and Block 2006). In this case, this method can improve upon existing classification systems in multiple ways. First, existing categorization systems may not be consistent over time. For example, in the newspaper database used by Newman and Block (2006), for some time periods advertisements for real estate were classified as such with the keyword *adv* (an abbreviation of *advertisement*), while for other time periods they were classified specifically as *real-estate* (Newman and Block 2006:752). Even in the absence of such obvious coding inconsistencies, terms such as *illegitimacy*, for example, may be replaced in the literature by terms such as *non-marital birth*. If the other terms used in this literature to discuss this phenomenon (terms such as *mother*, *unwed*, and *marriage*) were to stay the same over the time period, topic models would be likely to include all of these terms in the same topic, and similarities in the various articles containing this topic could be identified despite changes in terminology.

Second, this method allows researchers to investigate topics that go beyond the categories used in the existing system of keywords. The inductive nature of the method, which creates categories that arise from the structure of the data itself rather than imposing pre-existing categories on the data, is one of its most powerful features. Third, as noted by Blevins (2010), the topics produced by topic modeling make interpretation of ambiguous terms easier by presenting these terms in the context of co-occurring words. It thus represents an improvement over analyses that use simple word counts or keywords. For example, when the term “labor” appears, topic modeling can clarify in which documents the word refers to employment (if it appears in a topic together with terms such as “wage” and “work”) and in which documents it refers to the process of giving birth (appearing with terms like “hospital” and “maternity”). These features make topic modeling a method well-suited to cultural analysis (DiMaggio, Nag, and Blei forthcoming).

The topic modeling analysis for this study was done using code written in the program C, called “ctm-c,” which is publicly available online (Blei 2007). For this analysis, the code was adapted for the program Python. The distribution of topics across documents and the covariance of topics estimated by the model is calculated using output from this program. The distribution of topics across documents is obtained as follows: Let there be D documents in the corpus, V unique terms in the vocabulary, and K topics. The output file “final-lambda” contains a $D \times K$ matrix λ , whose elements λ_{di} can be transformed, using Equation 4.1 below, into a $D \times K$ matrix θ , whose entries θ_{di} give the proportion of document d that is made up of topic i . Each row in θ represents a document and each column represents a topic.

$$\theta_{di} = [\exp(\lambda_{di})] / [\sum_k \exp(\lambda_{dk})], \text{ where } k \in \{1, \dots, K\} \quad (4.1)$$

A covariance matrix representing the correlation of topics across documents can be calculated from θ , first using Equation 4.2 to convert θ back to Λ , a slightly different form of λ .¹¹

$$\Lambda_{di} = \ln(\theta_{di}) - (1/k) * \sum_i [\ln(\theta_{di})] \quad (4.2)$$

Then the covariance matrix $\mathbf{M}$ is calculated as shown in Equation 4.3 (Λ' is the transpose of Λ):

$$\mathbf{M} = (1/D) (\Lambda' \Lambda) \quad (4.3)$$

4.2.1 Selection of Models

Before the analysis of results begins, there are two central choices to be made: the number of topics to be used in the model must be selected by the researcher, and one of the results from different trials with the chosen number of topics must be selected. As noted above, since the model estimation starts from a random seed, different trials will produce different results as this random seed varies across trials. Although viewing lists of the top words for each topic can sometimes make it intuitively clear that a topic in one model is similar to a topic in another model, there is no well-defined procedure for deciding which model is the best for a given analysis, or even what the criteria for the “best” model should be. For this project, I developed a method to select the number of topics and the specific model, using a combination of quantitative analysis and subjective interpretation. For the academic journals *Population Studies* and *Population*, models with 50, 75, and 100 topics were tested. (Additional models with 10 and 15 topics were also tested, although results are not reported here. The topics identified in these models were too broad to be clearly interpretable. The results contained many instances of topics that included too many disparate concepts in a single topic to be useful for this analysis.

¹¹ The program output file containing λ requires conversion to Λ because λ has been adjusted so that the final column contains only zeros. The program output also includes a $(K - 1) \times (K - 1)$ covariance matrix, but the operations described in this section are needed to obtain a readily interpretable $K \times K$ covariance matrix. Many thanks to Sean Gerrish and Chong Wang for assistance with the conversion from λ to θ to Λ .

Results are available upon request.) For the smaller collection of articles from British newspapers, models with 15, 20, 25, 30, 35, and 50 topics were tested. For each set of documents—*Population Studies*, *Population*, and the newspapers—multiple trials (five for the journals, six for the newspapers) were run for each number of topics tested.

The method for selecting the number of topics is based on the simple ideas that a model so fine-grained that each topic appeared in only one article would clearly have too many topics, while in a model with too few topics, concepts that the researcher wished to distinguish would be combined in a single topic. Neither extreme would be analytically useful. While the first criterion can be evaluated using quantifiable rules, the second must be evaluated using subjective judgment requiring some prior knowledge of the corpus and taking into account the goals of the analysis. My quantitative analysis uses the distribution of topics across documents to determine whether the models create more topics than are useful for the analysis. Subjective evaluation of the coherence of the topics, based on the top words in each topic, determines whether the models combine disparate concepts within topics.

To determine whether there are too many topics, I set a threshold: if the number of documents for which a topic represented at least 5% of the document fell below 1% of the total number of documents in the corpus (between 12 and 15 documents), this topic was considered to cover too few documents to be analytically useful. In other words, there had to be at least 12-15 articles that were at least 5% made up of the topic for the topic to be considered useful. The numbers of topics that were not useful according to this definition are given for the British journal *Population Studies* in Table 4.1.

Table 4.1: Number of Uninformative Topics: British Journal Population Studies

<i>Number of topics</i>	<i>Mean of uninformative topics in model (represent >5% of content in < 1% of documents)</i>	<i>Range of uninformative topics</i>
75	5	3-8
100	21	18-24

For the 100-topic model, the average number of “useless” topics across trials was about 21, so most of the topics added by the 100-topic model (versus the 75-topic model) would not be useful. After inspecting the top 25 words for each topic, for each set of results obtained from the five trials of the 75-topic model, I found no pattern of topics containing terms that seemed to belong to separate concepts. I thus concluded that the 75-topic model was better suited to the analysis than the 100-topic model. Inspection of the top words for the 50-topic models showed that in each trial, the results contained topics that combined concepts I wanted to keep analytically separate, so the 75-topic models were chosen.

After choosing to use a 75-topic model, results from the five trials with 75 topics needed to be compared so that one set of results could be chosen. I developed a method for a formal comparison of the similarity of the results from the five trials, based on a quantitative measure of the similarity of the topics. I first compared pairs of topics using Euclidean distance, as follows: to compare a pair of topics, each unique word in the vocabulary is treated as a dimension of Euclidean space, and the distance between the two topics is obtained by calculating the Euclidean distance across all words in the vocabulary. Formally, for the set of words in the vocabulary containing V words, each topic modeling trial assigns a proportion or probability of each word appearing in each topic in the set of topics K . Let the value assigned to the i^{th} word in topic j be v_{ij} . For a given topic a , its similarity to a topic b is calculated using the familiar formula for Euclidean distance (Equation 4.4):

$$\sqrt{[(v_{1a} - v_{1b})^2 + \dots + (v_{Va} - v_{Vb})^2]} \quad (4.4)$$

Intuitively, the similarity of the topics is compared by measuring how different the representation of each word in the vocabulary is in the two topics: each term in parentheses represents, for one word in the vocabulary v_i , the difference in representation of v_i in the two topics a and b . The larger the difference, the greater the term to be squared, and thus the greater the distance between the topics. In other words, the Euclidean distance summarizes how dissimilar the two topics are, using their differences in the proportional representation of terms from the common vocabulary.

Using this measure, I compared results from each pair of *trials* as follows: For each topic identified in the first trial, the Euclidean distance to every topic in the second trial was calculated, and the closest match was identified. The distance of each of these closest matches was recorded. The goal of this comparison was to determine whether the set of topics identified by a given trial differs particularly strongly from the sets of topics identified by other trials. (The Euclidean distance can also be used as a measure of the robustness across models of the topics used in the analysis, although the current analysis does not use them this way.) The overall distance between each pair of trials was calculated using the mean of the Euclidean distances for the closest matches recorded in the previous step. In the case of the 75-topic trials for *Population Studies*, the results from one of the trials (the fifth) was found to be farther from the others than they were from each other, and two of them (the second and third) were found to be particularly close to each other. The results from the third trial were chosen for the analysis of *Population Studies*, after inspection of the top words in its topics revealed that its topics were more interpretable than those from the second trial.

An analogous analysis of the French journal *Population* produced the results shown in Table 4.2 below. Here the 100-topic models contain dozens of topics that do not meet the one-percent threshold. The 75-topic models also included a number of such topics, but 75 topics was

chosen for the analysis after inspection of the 50-topic models revealed that in each of them, several of the topics combined analytically distinct themes. Calculation of the Euclidean distances between the topics produced by the five trials of the 75-topic models of *Population* indicated that one of the models was notably further from the others; those results were excluded, and results from one of the remaining four trials (the first) was chosen on the basis of the interpretability of the topics.

Table 4.2: Number of Uninformative Topics: French Journal *Population*

<i>Number of topics</i>	<i>Mean of uninformative topics in model (represent >5% of content in < 1% of documents)</i>	<i>Range of uninformative topics</i>
75	16	14-18
100	37	36-39

For the newspaper articles, models were run first for 25 topics, 35 topics, and 50 topics. After reviewing the initial results, additional models were run for 15, 20, and 30 topics. A different cutoff point was used for the newspapers, since analysis revealed that their structure differed from that of the journal articles, as might be expected. First, the journal articles were longer. The mean number of words per newspaper article, after stopwords were removed, was 420. The mean words per French journal article was more than double that, at 968, and mean words per British journal article was 1,784. This means that the 5% cutoff used for the journal articles would only be about twenty words in a newspaper article. Second, documents taken from the newspapers were dominated by a single topic far more often than those taken from the academic journals (Table 4.3). Logically, we would expect the number of documents dominated by a single topic to be related to document length and the number of topics in the model. In the first case, longer documents simply have more space in which to address more ideas. In the second, the fewer topics in the model, the less specific each topic's content is likely to be, and the fewer possible topics exist to be represented in each topic. However, the observed difference

in documents dominated by a single topic could also reflect differences in the structure of different kinds of documents. The style of news reports often requires them to limit their focus to a single issue or event: although wide-ranging discussions of related ideas and theories may be possible in some feature articles from newspapers, on average this approach is more likely to be represented in a journal article. As Table 4.3 shows, longer documents are indeed less likely to be dominated by a single topic, and models with fewer topics are more likely to have documents dominated by a single topic. There is some evidence, nevertheless, that the structure of newspaper articles is different from that of journal articles: even when the number of topics used in the analysis of the newspaper articles is drastically reduced, the proportion of newspaper articles dominated by a single topic is still greater than the proportion of journal articles dominated by a single topic.

**Table 4.3: Percent of Documents Dominated by a Single Topic
(with >80% of content represented by a single topic)**

<i>Source</i>	<i>Number of topics</i>	<i>%</i>	<i>Range</i>
British journal <i>Population Studies</i>	75	17	16-20
	100	19	16-22
French journal <i>Population</i>	75	22	18-23
	100	26	23-31
Newspapers	15	43	40-49
	20	53	51-57
	25	54	43-61
	30	62	60-64
	35	64	62-66
	50	69	67-70

Based on these factors, instead of using a 5% threshold for the newspaper articles, I used a 25% threshold. I counted as “uninformative” those topics that were represented at the 25% level in less than 1% of the newspaper articles. In other words, uninformative topics were those

for which there were fewer than six articles in which the topic accounted for a quarter of the content. The results are presented in Table 4.4.

Table 4.4: Number of Uninformative Topics: Newspapers

<i>Number of topics</i>	<i>Mean of uninformative topics in model (represent >5% of content in < 1% of documents)</i>	<i>Range of uninformative topics</i>
15	1	0-1
20	1	0-1
25	2	1-4
30	3	1-5
35	4	1-10
50	17	14-23

Although these thresholds are somewhat arbitrary, they allow identification of models in which many of the topics are too specialized to provide meaningful information about the documents being analyzed. On this basis, the 50-topic model was rejected for the analysis of newspaper articles. Inspection of the top words for the topics in the remaining models showed that 35-topic model most clearly identified topics of substantive interest, including European fertility decline and immigration, that were not represented as clearly in the other models. Based on the calculations of distances between pairs of topics, the model from the first trial was excluded; the distances between the other models were all similar. The fourth trial produced the most clearly interpretable topics, and was chosen for the analysis. The chosen model contains only one topic that falls below the 25% threshold, and none of the topics of substantive interest for this analysis is close to the threshold.

4.2.2 Analysis of Topic Models

As noted above, there is a stochastic element in the process of topic modeling, which means that the same topics may not appear in the output of multiple trials. A clearly interpretable topic that appears in the results from one trial may not appear at all in the results for other trials. Or, even when a topic clearly related to a given concept appears in multiple trials, some of the

top words for the topic may vary across trials. The topics identified by topics modeling are certainly informative about the structure of the collection of documents, but they present the possibility of multiple interpretations, rather than a definitive mapping of *the* meaning of the texts being studied. In addition, conventional measures of statistical significance and bounds of certainty are not applicable to topic modeling results, which are produced from complete information about the contents of the documents, rather than a sample of a larger population. The results of topic modeling must therefore be interpreted carefully; in this study, I use the results to guide interpretive analyses.

In addition to using the top words in each topic to understand the substantive meaning of the topics that were identified, I referred to the articles in the corpus themselves to guide my interpretations. Using θ , the distribution of topics across documents, I located documents in which the topic of interest accounted for more than half of the content, and referred to the title, author, and date of publication (and occasionally the full text of the article) for additional information about the meaning of the topic. At times I also used simple word counts to confirm inferences I drew from the topic models; an example of this technique will be presented in the discussion of immigration later in this chapter.

In the analysis that follows, I ask the following questions:

1. *How do the objects of inquiry for demographic research differ across these two national contexts?*
2. *How do British and French demographic research agendas change from the end of World War II to the beginning of the twenty-first century?*
3. *How do observed patterns in demographic research agendas relate to demographic trends over the same period?*

4. *How do the issues addressed in media coverage of fertility and population compare to the issues found in academic research publications? Does this relationship vary over time?*

4.3 Results

The first goal of the analysis is to understand what differences exist in the kinds of research questions addressed by academic demographers in these two national contexts. In order to do so, for each country, I examine the distribution of topics across the documents in the corpus. The main summary measure used is the mean proportion of documents represented by a given topic. This measure is obtained by taking the mean, across all documents in the corpus, of the proportion of each document that is composed of the given topic. The distribution of topics is quite flat in both journals, once non-substantive topics related to front matter and announcements are removed. In the British journal *Population Studies*, for virtually every topic, the mean proportion of documents the topic accounts for is approximately 2% or less. The two exceptions are a topic related to demographic transition theory, which accounts for about 4%, and a topic about economic development, which accounts for about 3%.

Using a different measure of the distribution of topics, the proportion of documents in which a given topic accounts for 5% or more of the document, gives a distribution with a similar general shape: the transition theory topic makes up 5% or more of 18% of the documents, while the economic development topic is thus represented in 14% of documents. The rest of the topics follow a smooth distribution downward from 10%. The distribution for the French journal *Population* is similarly flat, with a topic related to the census and population statistics having a mean proportion of documents of 5%, and the rest of the topics declining from a level of about 3%. Again, the 5% threshold produces a similar distribution.

For this analysis, a major element of interest is the proportion of topics that are related to high-fertility contexts, versus the proportion of topics related to low-fertility contexts. The former include topics such as one identified in the analysis of *Population Studies*, “Family planning programs,” in which the most frequent words include *family, policy, program, health,* and *government*. This topic is strongly represented in a *Population Studies* article from 1976, entitled “Population Planning in Asia in the 1970s”: approximately 80% of the content is from this topic. The latter type of topic includes a topic on “Working mothers,” identified in the analysis of *Population*, which contains the French terms for *work, time, mother, France,* and *policy*. Articles in *Population* in which this topic is strongly represented include “Female Work and Extra-Marital Fertility in Germany in the 1990s: Comparison between the East and West” (*Travail féminin et fécondité hors mariage en Allemagne au cours des années 1990: Comparaison entre l'Est et l'Ouest*) and “Policies to Support Fertility: A Range of Possibilities” (*Les politiques de soutien de la fécondité: l'éventail des possibilités*), with approximately 98% and 83% of their contents, respectively, represented by this topic.

Table 4.5 (at the end of this chapter) shows the topics that appear with greatest frequency in each journal by country and by decade. Topic names are chosen to best summarize the contents of the topic, based on the top 25 words in each topic; as described above, articles in which the topics were strongly represented were also used to confirm the meaning of the topic content, and to clarify when necessary.

Comparing the results for the two countries shown in Table 4.5 sheds light on the first question: what was being studied in postwar British and French research on fertility, and how did it differ by country? One important difference that can be identified in the most prominent topics displayed here relates to the distinction between questions relevant to demographic processes in

richer countries with fertility near replacement level, and questions that are most important for poorer countries with fertility above replacement.

Many of the topics from the French data are explicitly related to lower-fertility countries, most often France, but also its European neighbors. In these topics, the country names often appear among the most frequent words in the topic: this occurs with topics such as “War & France” and “Eastern & Western Europe.” In Britain, on the other hand, names for the country itself do not occur very often as top words—only one topic, “British,” features them among the top words. (This difference is not just an artifact of the modeling process: the word *France* is the most common word remaining after the top ten words were removed for the analysis of the French journals, accounting for about 1% of all the words in the data; the combined occurrences of the terms *Britain*, *England*, *Wales*, *Scotland*, and *Ireland* are less than a third of that.) Understanding which of the British topics are related to demographic processes in lower-fertility countries thus requires historical knowledge of the field, or examination of the articles in which these topics are prominently represented. For example, as described in earlier chapters, concern over differential fertility by class in Britain led to a focus on occupation and fertility, and inspection of the articles in which the topic “Occupation” appears confirms that they are indeed mainly related to British fertility.

In addition to topics that are clearly related to either low-fertility or high-fertility contexts, there are several that refer to processes or characteristics that could occur in either context: “Marriage,” “Attitudes and ideals,” and topics related to economic concepts are examples. These can be understood better by looking at their covariance with other topics, or by referring to articles that are dominated by these topics. There are also a number of topics related

to methods and measurement. Many of these are related to cohort or period measures; others relate to formal models or quantitative analysis of demographic phenomena.¹²

To address the second research question, whether the research agenda for demographic research changed over the time period under study, the panels representing each country in Table 4.5 can be compared across time periods. Inspecting the topics with the highest representation in these journals, it becomes clear that in both countries, topics related to low fertility accounted for more of the corpus at the beginning and end of the period under study, and made up less of the corpus during the middle of this period. This implies that interest in low fertility was higher at the beginning and end of the period than in the middle. Conversely, topics related to high fertility peaked during the middle of the period. This relationship might be expected, since the middle of the period coincides with worldwide concern over population growth and fears of a “population explosion.”

Despite the similarity of this overall pattern in both countries, however, there are important cross-national differences in the pattern of change over time. Table 4.6 shows, for each country for selected decades, lists of the topics with the highest mean representation that are clearly related to low and high fertility, respectively. The number at the top of each cell in the table gives the mean percent of the documents in that time period made up of the topics listed in the cell. (These numbers serve to illustrate that a greater number of topics is reflected by greater proportional representation; their statistical significance cannot be estimated.)

¹² Methodological topics may also be associated at times with high- or low-fertility contexts: in France, part of the debate over the merits of period versus cohort measures became a highly politicized discussion about pro-natalism and the field of demography (Winter 1994; Le Bras 1991). Unfortunately, further discussion of this aspect of demographic methods is beyond the scope of this study.

Table 4.6 Representation of Low-fertility and High-Fertility Topics by Country

	British		French	
	<i>Low-fertility topics</i>	<i>High-fertility topics</i>	<i>Low-fertility topics</i>	<i>High-fertility topics</i>
1956-1965	3.8% British Occupation	5.3% Africa & data Latin America	12.4% Housing Contemporary France 1 War & France East. & West. Europe Regional France & migration	8.2% Third world Growth/resources Census/Tunisia
1966-1975	2.8% Soviet bloc	6.7% Family planning programs Latin America Policy & planning	4.2% East. & West. Europe Contemporary France 2	9.9% Growth/resources South & SE Asia Growth & policy Census/Tunisia Third World
1976-1985	0%	6.0% Policy & planning Rural economics Bangladesh	10.9% Retirement policy Eastern & Western Europe Family policy Regional: Italy & France Contemporary France 2	6.1% Growth/policy IUSSP meetings
1996-2005	6.1% Low fertility British Immigration & Israel	12.6% African surveys Policy & planning Mortality & crisis Rural economics Policy/development	25.7% East. & West. Europe Family policy Immigration Retirement policy Working mothers Contemporary France & Western Europe	16.2% Growth/policy Middle East Rural conditions Chinese policy Contraception & Africa

Table 4.6 shows that at all time periods, topics related to low fertility are well-represented in the French journal *Population*, and they are often much more numerous than the high-fertility topics. In contrast, the reverse is true for the British journal *Population Studies*. As noted before, there is relatively little attention paid to Great Britain itself in the British low-fertility topics,

while many of the French low-fertility topics are specifically related to France, or are regional studies that include France. This difference is probably related to the institutional support for demographic research provided by INED, which guaranteed a supply of research devoted to topics related to French fertility. Although much of this research was historical, a good deal of it was devoted to contemporary issues and trends, which occurred in the context of lower fertility. It might be expected for this work to be published in the journal edited by INED's director. In addition, this difference may be related to a phenomenon discussed in the previous chapter: if the British demographers accepted an account of demographic transition in which transition was thought to end with equilibrium at replacement-level fertility, this would reduce interest in post-transition fertility, including postwar British fertility, as an object of inquiry for demographic research. As shown in Table 4.5, British demographers are mainly interested in Britain for studies in *historical* demography, which examine the process of fertility transition using historical data from parish records and other local sources.¹³ The continuing interest of French demographers in studying low-fertility contexts, including contemporary France, may then be understood as a reflection of uncertainty about the course of post-transition fertility.

Addressing the third question in this analysis, the relationship between changes in research questions over time and changes in contemporary demographic trends, allows exploration of whether demographic research agendas in Britain and France responded differently to changes in fertility trends in the decades after World War II. Rosental has shown that during the French baby boom, a period of population growth that reversed the long-term

¹³ Historical demography is not necessarily divorced from interest in contemporary demographic trends: Paul-André Rosental has described how French historical demography was inspired by the desire to understand low French fertility (2003a; 2003b). However, my argument here hinges on the British focus on historical demography of Britain *in the absence of* research on contemporary demographic behavior in Britain.

trend of fertility decline, Sauvy and other French demographers believed that vigilance was needed to prevent a return to lower fertility, even though contemporary demographic trends did not seem to give cause for concern (Rosental 2003b:102). In contrast, British demographers have reported that increasing birthrates starting in the mid-1940s led to the demise of concerns over British fertility decline (Grebenik 1991:15). Higher salience of past fertility decline in France, due to the long history of French concern over population decline, as well as differences in demographic theories of decline, may have led to continued French vigilance against fertility decline, in contrast to British complacency. If so, this difference could be reflected in demographic research agendas in the two countries. Is there, then, an observable difference in demographic research agendas that could be attributed to French vigilance, and a lack such vigilance in Britain? Evidence to address these questions may be found by examining reactions in each country to the steady drop (with the exception of a slight uptick in 1971 in France) in total fertility rate from about 1964 to about 1976, which ended the baby boom in both Great Britain and France (see Figure 1.1). Comparing the topics that appeared the most in the decades before, during, and after this decline (1956-1965, 1966-1975, and 1976-1985) can indicate how sensitive agendas for demographic research were to this development in each country.

As shown in Table 4.6, during the pre-decline decade of 1956-1965, representation of low-fertility topics in the British journal was similar to representation of high-fertility topics. In contrast, the French journal displayed greater representation of low-fertility topics, both in terms of number of topics and as a mean proportion of documents. Since the French baby boom was in full force during this period, with birth rates higher than those in Britain, this result is somewhat surprising. It probably reflects, however, a lag time needed to adjust research agendas, one that apparently affects even journals that intend to be policy relevant. Topics in the French journal

such as “Housing” and “France & War” certainly seem to be continuations of interest in topics that were particularly salient during the immediate postwar period.

In the presence of such a lag, we would expect the decade of midcentury fertility decline, 1965-1975, to be dominated by research that reflects the interests of the previous decade: the baby boom years. Indeed, during this decade both the French and British journals feature more topics related to high-fertility issues than low-fertility issues, accounting for a higher proportion of their article content. Topics related to family planning programs in Britain, and those related to population growth in France, are particularly prominent. In Britain, the only highly represented topic related to low-fertility contexts concerns countries in the Soviet bloc, an issue of strategic significance. French low-fertility topics similarly included discussions of fertility in Eastern bloc countries, in addition to topics related to French fertility. The French low-fertility topics in this decade represent, however, the fewest topics and the lowest proportion of article content devoted to low-fertility topics during the sixty years of the French journal’s publication examined here.

In light of this evidence of a time lag in the response to contemporary demographic trends, the reaction of the academic community of demographers to the fertility decline would be expected to appear in the decade following the decline, 1976-1985. Comparing the top topics from the two journals during this time, it is clear that the French journal’s output did indeed change to reflect greater interest in low-fertility contexts: in addition to continuing appearances by topics from the previous decade at the top of the list, three additional low-fertility topics are represented among the top French topics. Two of them, “Retirement policy” and “Family policy,” are explicitly policy oriented and focused on France, indicating a close correspondence between research agendas and policy interests, a feature of French public sphere that has been

noted in many other contexts. In stark contrast, there are *no* topics associated with low fertility among the top British topics during this period. It is not until the following time period, 1996-2005, that evidence of increased British attention to low-fertility contexts appears, with three topics related to low-fertility contexts, including the topic “British.” The representation of British low-fertility topics is still not as high as in the French case.

This lag time in the British academic response to demographic trends is highlighted by a comparison to the corpus of newspaper articles. It should be no surprise that the issue of low fertility began to be addressed in the popular press before it appeared in academic publications in Britain: the press would be expected to be able to react faster to contemporary events, especially in light of the lag time observed in academic research. What is more surprising is the fact that there was a two-decade lag in Britain, relative to the observed increase in press coverage. The mean proportion of newspaper content in the topic “European decline” rose from less than 1% before 1966 to over 4% in the period 1966-1975, and stayed at the latter level during 1976-1985. Since the British press response to fertility decline started in 1966-1975 (and the French press response can’t have started before that period, since the phenomenon itself hadn’t yet appeared before that time), the lag in the British academic response, relative to the French academic response, appears notable.

Comparison with the popular press highlights another difference between the French and British journal content: representation of the issue of immigrant fertility. A topic about immigration appears in the French academic corpus, mainly represented during the final time period of the analysis. The only immigration-related topic appearing in the British results, however, is mainly related to articles about fertility of immigrants to Israel: of eleven articles in which this topic represents at least 25% of the content, seven are about Israel and Palestine. None

of the rest are related to fertility of immigrants to Britain. To check whether this absence was an artifact of the topic modeling procedure, I searched for all articles in which the words *immigration* or *immigrant* appear at least ten times. The nine additional articles found through this search focus either on Western Europe in general, one of the other countries in Western Europe, or former British colonies. No articles about fertility in the British journal are primarily about immigration to Britain.¹⁴

Taken in isolation, it might be thought that the journal's lack of attention to immigrant fertility in Britain reflects this issue's relative unimportance in the British context. Indeed, since concerns about low fertility have historically been linked to fears of immigration (Teitelbaum and Winter 1985), it might be conjectured that British lack of concern over domestic fertility led to an absence of concern about immigrant fertility. The analysis of newspapers, however, makes it clear that this was not the case. Starting in the 1960s, immigrant fertility played an important role in a high-profile public debate over immigration and race in Britain. Conservative politician Enoch Powell, a former Minister of Health, raised the issue of immigrant fertility in 1971. He had lost his position in the Shadow Cabinet in 1968 over a speech in which he predicted in inflammatory terms that immigration would cause increasing racial conflict in Britain, popularly known as the "Rivers of Blood" speech. Newspaper coverage of the 1971 debate was centered on claims by Powell that the Registrar General was under-representing the immigrant birthrate, and

¹⁴ The only discussion of fertility and immigration to Britain is found in the second appendix of a 1968 article by David Glass, entitled "Fertility Trends in Europe since the Second World War." This section, which outlines overall immigration trends since the war in several European countries, includes on the forty-third page (of forty-four) a description of the fertility of immigrants to England and Wales. Glass writes that their fertility is higher than native fertility, but makes it a point to note that this is true for immigrants from the British Isles, as well as those from other countries. He also notes that "the data do not permit a full, objective analysis of fertility differentials," due to a lack of data on socioeconomic status and religion (Glass 1968:145).

counterclaims by the Registrar General that Powell was misrepresenting the facts (Evans 1971a; Evans 1971b). Given this highly public dispute over a topic of demographic expertise, it is notable that not a single article in *Population Studies* addressed the issue, aside from the appendix described in note 5. During this same period, immigrant fertility *did* become a topic of academic inquiry in France, although its representation was negligible until the 1995-2005 time period.

The long time lag before British academic research addressed low fertility, along with the absence of British demographic research related to immigrant fertility in Britain, permit a variety of interpretations. First, it is possible that demographic research agendas in Britain are not as influenced by policy priorities as French research agendas, and are driven mainly by the logic of inquiry. In this case, the differences between newspaper coverage and academic research in Britain would demonstrate the relative autonomy of the field of demography in Britain, compared to France. A second possibility is that British demographers' distance from policy-relevant research on low-fertility topics might be driven by commitments to policy-relevant topics in other areas. The lack of institutional structures for demographers within Britain, discussed in the previous chapter, may have led British demographers to seek institutional support from international organizations. If they then focused their attention on issues of family planning in high-fertility contexts, for example, national and regional issues could be "crowded out" by phenomena that were geographically further afield. Ties to international organizations could also have benefited from some British demographers' intellectual and organizational affinities. Earlier commitments to widespread provision of birth control would make international family planning research a better fit for the British demographers than for the French, who were less supportive of family planning measures in the immediate postwar period.

This analysis provides some evidence in support of the first interpretation. Certainly French demographic research is more closely tied to domestic policy in general than is British demographic research: the topic modeling analyses identified topics in the French journal related to policy issues such as family policy and retirement policy, but did not identify any similarly policy-centered British topics. The question of how influential demographic research was, however, is left unresolved. It is not clear whether British distance from mass-media topics represents autonomy or irrelevance (which are not mutually exclusive). Nor is it clear whether French policy relevance is produced by demographic research that follows policy debates or leads them. A comparison of the French academic topics with French mass-media topics, which could not be attempted in this study for logistical reasons, could help to resolve this question.

The analyses also provide some support for the second interpretation. An examination of the four topics in the British case that include the term “policy” among the top twenty-five words shows that three of these four topics were strongly represented in articles about less-wealthy countries considered to be “pre-transition” or in the process of transition. For example, a topic on “Policy and Planning” includes the top words *development*, *growth*, and *India*. All of the articles in which this topic represented 50% or more of the content were related to so-called developing countries. The single policy-related topic related to “post-transition” contexts featured top words including *abortion*, *commission*, *social*, and *problem*. Many of the articles in which this topic was represented focused on fertility in countries with replacement-level or below-replacement fertility, including Sweden, and a few of these articles were devoted to the British context. However, the representation of this topic declined over time, while the three topics related to above-replacement fertility were all increasingly represented over time. In the French case, in contrast, although there are policy-related topics related to above-replacement contexts, the

multiple topics related to below-replacement contexts are generally *increasingly* represented over time: the main topic related to “Family Policy” increased from less than one percent in the first time period to over 4.5% in the last time period. It would seem, then, that although the French journal may generally give more attention to policy-relevant issues, the British attention to policy varies greatly with the context in which policy is being discussed: policies for higher-fertility contexts received far more attention than policies for lower-fertility contexts.

4.4 Conclusion

In this chapter, I have used topic modeling to inductively identify prominent themes in academic publications about fertility in demographic journals in Great Britain and France. I compared these themes across national contexts, and over a sixty-year time period. Then I compared the themes in found in the British academic publications to those found in British newspaper articles about fertility and population. I found that the French journal devoted more of its content to issues related to contexts in which fertility was at or below replacement levels, while the British journal focused much more strongly on contexts in which fertility was above replacement. In both journals, however, there were similar overall trends over time in the patterns of academic attention given to fertility in low-fertility vs. high-fertility contexts, with attention to low fertility being high at the beginning and end of the period, but lower in between; high fertility received more attention during the middle of the period. These trends broadly correspond to contemporary national trends in fertility in these two countries. There are, however, some important differences between the two countries: there was a longer lag between demographic change and change in research agendas in Britain than in France. This lag is symptomatic of a general difference in the journals, with the French journal containing more material that is explicitly related to policy issues. The comparison between British academic

publications and mass-media publications confirmed that issues addressed in academic research do not necessarily correspond to those covered in the press. In many cases, British academic attention lags behind popular attention, and in some cases, public controversies are simply not represented in academic research.

I argue that the cross-national difference in attention to contexts of replacement-level or below-replacement fertility reflects a difference in the institutions that supported demographic research in these two countries, as well as a difference the influence of demographic transition theory, described in Chapter 3. According to transition theory, populations in which fertility has fallen to replacement level have “completed” transition to reach a new equilibrium. Their fertility is thus of limited interest as an object of inquiry. If this assumption of equilibrium at replacement is not made, however, then fertility in such populations may be an important topic for research: if changes in fertility are still possible after fertility decline to replacement level, then understanding the reasons for, and implications of, such changes can be an important contribution of demographic research. By continuing to publish studies that examine fertility at lower levels, even during the relatively high-fertility years of the 1950s and 1960s, French demographers created a large literature that served as a readily-accessible knowledge base about fertility at or below replacement, which may have helped them to adjust the focus of their research agenda more quickly than the British in response to the fertility decline of the late 1960s and early 1970s.

Table 4.5 Topic Titles and Percent of Corpus, by Country and Time Period

1946-1955

British		French	
Descriptive statistics 1	7.3%	Housing	12.2%
Economics & transition	5.3%	Contemporary France	11.5%
Africa & data	5.0%	War & France	8.7%
British 1	4.1%	Census statistics	8.3%
Marriage	3.1%	Rural-urban	5.3%
Nuptiality	3.0%	Social context	5.3%
Japan	2.9%	Economic	4.6%
Historical demography	2.9%	Growth & resources	3.6%
Transition theory	2.8%	Third world	2.2%
Parish data	2.1%	Quantitative analysis	1.9%
Contraception & abortion	1.9%	Historical demography	1.6%
Abortion & the state	1.7%	Projections & migration	1.6%
Descriptive statistics 2	1.7%	Attitudes & ideals	1.5%
Class & status	1.6%	Fecundity	1.2%
Rural-Urban migration	1.6%	Geography: France	1.1%
Estimating mortality	1.3%	Abortion & contraception	1.0%
Employment & childlessness	1.1%	Family policy	1.0%
Catholic & Ireland	1.1%	Growth & policy	1.0%

1956-1965

British		French	
Descriptive statistics 1	4.7%	Social context	10.9%
Nuptiality	3.8%	Census statistics	7.9%
Marriage	3.7%	Economic	5.9%
Descriptive statistics 2	3.5%	Rural-urban	5.7%
Class & status	3.3%	Housing	4.6%
Abortion & the state	3.2%	Third world	3.8%
Transition theory	3.0%	Contemporary France	3.0%
Africa & data	2.6%	Growth & resources	2.9%
Latin America	2.6%	War & France	2.8%
British 1	2.4%	Abortion & contraception	2.5%
Contraception & abortion	2.2%	Projections & migration	2.2%
Economics & transition	2.1%	Historical demography	1.7%
Historical demography	1.7%	Attitudes & ideals	1.6%
Estimating mortality	1.6%	Fecundity	1.6%
Rural-Urban data	1.5%	Census & Tunisia	1.4%
Occupation	1.5%	Growth & policy	1.3%
Jewish population	1.5%	Quantitative analysis	1.1%
Formal models	1.4%	French Regional & migration	1.1%

1966-1975

British		French	
Estimating mortality	3.2%	Census statistics	5.8%
Transition theory	2.9%	Abortion & contraception	4.0%
Soviet bloc	2.8%	Rural-urban	3.4%
Contraception & abortion	2.8%	Economic	2.7%
Family planning programs	2.6%	Social context	2.7%
Rural-Urban data	2.3%	Growth & resources	2.3%
Formal models	2.2%	Historical demography	2.1%
Latin America	2.1%	Period/cohort measures	2.0%
Marriage	2.1%	South & SE Asia	2.0%
Policy & planning	2.0%	Projections & migration	1.9%
Economics & transition	2.0%	Growth & policy	1.9%
Family size & economics	1.9%	Census & Tunisia	1.8%
Descriptive statistics 1	1.9%	Third world	1.8%
Nuptiality	1.6%	IUSSP meetings	1.6%
Abortion & the state	1.6%	East & West Europe	1.5%
Fecundity	1.6%	Family size	1.4%
Rural-Urban migration	1.6%	Contemporary France	1.4%
Race & minorities	1.6%	Family size: France	1.3%

1976-1985

British		French	
Estimating mortality	3.6%	Growth & policy	4.2%
Transition theory	3.2%	Period/cohort measures	3.4%
Economics & transition	2.9%	Census statistics	2.6%
Period/cohort	2.1%	Historical, France	2.4%
Policy & planning	1.8%	Cohort fertility	2.1%
Population momentum	1.7%	Retirement policy	2.0%
Infant mortality & class	1.6%	Quantitative analysis	1.9%
Econ. & quantitative analysis	1.6%	IUSSP meetings	1.9%
Regression & education	1.6%	Rural-urban	1.7%
Timing data	1.6%	East & West Europe	1.7%
Formal models	1.5%	Family policy	1.7%
Contraceptive methods	1.4%	Abortion & contraception	1.6%
Rural economics	1.4%	Regional: Italy & France	1.5%
Breastfeeding	1.4%	Growth & resources	1.5%
Abortion & the state	1.3%	Contemporary France	1.5%
Bangladesh	1.3%	Economic	1.5%
Employment & childlessness	1.3%	Projections & migration	1.3%
Rural-Urban migration	1.3%	Attitudes & ideals	1.3%

1986-1995

British		French	
Transition theory	5.7%	Growth & policy	3.7%
Economics & transition	3.4%	Cohort fertility	3.5%
Policy & planning	3.3%	Marriage	3.1%
Rural economics	3.0%	Family policy	2.8%
Surveys WFS & DHS	2.2%	Historical, France	2.7%
Period/cohort	2.2%	Period/cohort measures	2.5%
African surveys	2.1%	Historical demography	2.5%
Estimating mortality	2.0%	East & West Europe	2.5%
Policy & development	1.7%	Demographic transition	2.2%
Regression & education	1.6%	Contraception: Africa	2.1%
Diffusion	1.6%	Contemporary France 2	1.9%
Formal models	1.5%	Middle East	1.9%
Econ. & quantitative analysis	1.4%	Contemporary France 1	1.5%
Breastfeeding	1.3%	Period/cohort	1.5%
Class	1.3%	IUSSP meetings	1.5%
British 2	1.3%	Rural-Urban 2	1.4%
Cost of children	1.1%	Quantitative analysis	1.4%
Hazard models	1.1%	Contemp. France & W. Europe	1.4%

1996-2005

British		French	
Transition theory	6.7%	Period/cohort measures	4.7%
African surveys	4.1%	Contemp. France & W. Europe	4.6%
Low fertility	3.8%	East & West Europe	4.5%
Economics & transition	3.3%	Growth & policy	4.3%
Policy & planning	3.0%	Middle East	3.6%
Diffusion	2.9%	Family policy	3.5%
Mortality & crisis	2.5%	Cohort fertility	3.4%
Hazard models	1.9%	Contraception: Africa	3.4%
Period/cohort	1.9%	Immigration	3.1%
Population momentum	1.7%	Rural conditions	3.1%
Rural economics	1.6%	Retirement policy	2.5%
Early demographic transition	1.5%	Historical demography	2.2%
Policy & development	1.4%	Historical demography 2	2.0%
Estimating mortality	1.3%	Working mothers	1.9%
Couple contraception	1.2%	Chinese policy	1.8%
Israel & immigration	1.2%	Abortion & contraception	1.6%
British 2	1.2%	World future	1.6%

CHAPTER 5: Conclusion

How does population size become defined as a problem in public debate in some times and places, but not others? To answer this question, this dissertation has asked how shared interwar concerns over fertility decline in Great Britain and France evolved in the postwar twentieth century so that fertility decline became an issue of public concern in France, but not Great Britain. Since demographic experts became key figures in this process, my analysis has focused on their activities and contributions in three spheres in which demographic knowledge is produced, reproduced, and disseminated: state commissions on population, national population projections, and academic publications.

5.1 Summary of Findings

Chapter 2 examined demographic experts' work with state commissions on population that were appointed in Great Britain and France at the end of the Second World War. In an analysis of archival records from these commissions, evidence of disagreements was used to elucidate the ways that demographers defined their discipline, as well as the ways that they understood their contributions to knowledge and public debate on population and fertility decline. First, focusing on internal disputes among commission members, I found that the British demographers, whose institutional position was weaker than that of the French demographers, used the commissions as a forum to make disciplinary claims that distinguished their contributions from the work done by the actuaries and medical statisticians in the civil service. Second, my examination of cross-national disagreements between the two commissions' members showed that the British demographers' approach to demographic knowledge and empirical evidence differed from that of the French demographers. The British demographers believed that their major contribution to the population commission lay in the discovery of new

knowledge through empirical investigation and statistical analysis, while the French demographers believed that they already understood processes of population decline, and that their main contribution lay in bringing their specialized knowledge to a wider audience. Another important difference between the two commissions' approaches to empirical evidence was the British commission's faith in the analytic value of one-dimensional quantitative measures such as IQ scores, which contrasted with French arguments for the need to use multiple dimensions of measurement. These differences demonstrate that some aspects of nineteenth-century national styles in statistical reasoning in these two countries, previously described by historians of statistics, were maintained in twentieth-century demography.

The third chapter is an analysis of official national population projections that were made in each country over the course of the fifty years following World War II. I described differences in the institutional context in each country that shaped differences in the kinds of organizational actors who came to make each country's projections. My analysis then showed that, despite general consensus on the demographic methods used to make projections, cross-national differences in the use of multiple variants and the assumptions made about future fertility levels resulted in very different predictions for the demographic futures of the two countries. Using a comparison of the error in the predicted growth rate for each country, together with a re-calculation using alternate fertility assumptions, I found that quantitative differences in the projections were mainly due to differences in fertility assumptions. A pattern emerged over the time period under study: British projections held to a strong assumption that fertility would rise to reach equilibrium at or near replacement levels, while French projections usually presented two main possibilities. The first was a rise in fertility to replacement level, similar to that found in the British projections, while the second was fertility that stayed below replacement level

indefinitely. I argued that these differing assumptions about the long-term trend of fertility reflected deeply-held cultural beliefs articulated in different intellectual traditions, as well as different organizational commitments. In British projections, the model of fertility *transition* (in which transition ends with stable fertility at replacement level) was dominant, as it was in much of the postwar world. In French projections, this model coexisted with an older model of demographic *revolution*, formulated by French demographer Adolphe Landry, which articulated the possibility of perpetual fertility decline, eventually leading to population decline. This analysis of projections revealed a process in which national contexts shaped the subjective assumptions used to make population projections, which in turn created concrete, quantified differences in expectations for the demographic future.

In the fourth chapter, I compared French and British demographers' academic publications about fertility over the sixty years following World War II, asking to what extent and how this self-regulated field of demographic knowledge developed differently in these countries. For the British case, I then compared academic publications to mass-media publications about fertility, in order to examine relationships between expert knowledge and broader public knowledge. My cross-national analysis found that academic publications in Britain were much more likely to focus on contexts in which fertility was above replacement level than on contexts where fertility was at or below replacement level, to the extent that the latter were nearly completely excluded in some decades. In France, however, both kinds of contexts were represented in all decades. This finding provides further evidence for the dominance of demographic transition theory in shaping the British demographic research agenda: transition theory claimed that low, stable levels of fertility and mortality would follow fertility declines to replacement level, making "post-transition" population processes relatively

uninteresting objects of inquiry. In France, where the theory of demographic revolution implied that the eventual demographic outcome of fertility decline was unknown, and thus could be taken as an object of inquiry in its own right, studies of lower-fertility contexts remained important research topics throughout the period. An analysis of the timing of changes in research topics showed that the French academic publications responded more quickly and more strongly to changes in actual demographic trends than did British academic publications, and were more likely to be explicitly linked to state policy. The comparison of British academic and popular publications showed that, in contrast to the tendency of French academic demography to pursue research topics related to policy debates, academic publications by British demographers completely ignored some policy-relevant population issues, such as discussions of immigrant fertility, that were featured in the popular press.

5.2 Implications for a Model of Academic Expertise and Public Discourse

Taken together, these analyses show how academic experts' contributions to public understandings of a topic requiring expert interpretation—fertility rates—were mediated by a number of different mechanisms. Differences in intellectual traditions and alliances with different social actors influenced the emphasis experts placed on different aspects of fertility decline. At the same time, the ability of experts to present their views on the issue to a wider audience was heavily mediated by organizational and institutional configurations. These factors acted together to influence the kinds of demographic knowledge produced in different national contexts in the postwar twentieth century. Through demographic experts' attempts to define their discipline and its contributions, their projections of the demographic future, and the research agenda that they set for the discipline, it is possible to see how cross-national differences both created different kinds of roles for demographic experts in defining and addressing population

“problems,” and at the same time shaped demographers’ varying definitions of these problems. These factors affected the ways that demographic experts contributed to public debate, as well as the content of their contributions, leading to the different understandings of very similar birthrates observed in Great Britain and France.

First, academic demographers aligned themselves with different social movements during the interwar period of shared concern over low fertility. In France, widespread concern over fertility decline, promoted by the influential movement of family associations, led not only to the appointment of academic demographers to the *Haut Comité*, but also to the founding of the National Institute for Demographic Studies (INED), an institutional structure that greatly enhanced the influence of demographers. In contrast, during the interwar period, British academic demographers aligned themselves with the eugenics movement, which was itself on the decline. Although demographers, together with members of the eugenics movement, were successful in obtaining appointments to the Royal Commission on Population, when the Commission finished its work and disbanded, the demographers were left without a strong institutional position in the postwar era, despite their efforts to carve out a disciplinary niche.

Second, the difference in the institutional position of academic demographers in the two countries affected their ability to participate in public and policy debates on birthrates and population trends. Academic demographers produced official population projections for the state in France, but were effectively excluded from this process in Great Britain, where projections were instead made by civil servants with a history of dismissing concerns about fertility decline. Thus academic demographers in Britain had less access than their colleagues in France to public platforms from which to shape public discussions of birthrates and population trends.

Third, even within the boundaries of the discipline of academic demography—in the academic journals controlled by academic demographers—different kinds of research topics were emphasized in each national context. The stronger focus in France on topics related to low fertility can be explained through differences in both intellectual traditions and institutional configurations. The French theory of demographic revolution, with its emphasis on fertility decline below replacement, together with INED’s institutional support for research on topics relevant to French demography, contributed to a research agenda that differed from the British emphasis on higher-fertility contexts.

The operation of these mechanisms demonstrates that multiple factors combined to produce decades of continued concern about low fertility in France, even as similar concerns faded in Great Britain. The “conventional wisdom” that explains this difference with historical differences in population trends is partly correct, but the influence of this history was sustained over such a long period due to institutional and theoretical frameworks that maintained the issue’s salience in France, but not Great Britain, throughout a period of changing demographic trends.

5.3 Limitations

One of the main limitations of this study is the opaqueness of decisions made in the political sphere and their influence on the processes described here. Policy decisions made for reasons unrelated to population issues, such as financial concerns, almost certainly affected the processes described in this analysis. Additional analyses that give explicit attention to the political climate and policy priorities of the governing party could help to address, if not eliminate, this shortcoming. Another limitation is the problem of causal analysis inherent in a study that uses a very small number of cases. This analysis is able to describe processes that

occurred, and make an argument for their causal influence on the outcomes of interest. Proving a causal relationship is, however, beyond the scope of this research design. Although I believe the richness of detail that case studies allow has justified this tradeoff for this study, the results cannot be interpreted as proof of a causal link.

5.4 Directions for Further Research

There are several directions of interest that could be pursued in future research. One is a more explicit investigation of the channels of influence linking demographers' understandings of demographic phenomena to broader public and policy debates over population. Completing the comparison of academic and mass-media publications by including the French case would allow direct comparison of the relationship between academic research and broader public debates on fertility in the two countries. In addition, materials from state actors in policy debates, including Parliamentary records and archival records from state agencies, could be included in the analysis. International conferences and congresses on population, at which academic and policy spheres intersect, would be another valuable source of evidence. The use of these additional sources would allow comparisons of the two countries across three spheres of discourse: academic, general public, and policy spheres.

Another extension of this analysis could examine the long-term fate of the eugenic ideas found in interwar and immediate postwar discussions of fertility and population. Although these ideas are generally understood to have disappeared from legitimate public discourse, some of the institutions that promoted them still exist, and some are still associated with academic demography. In Britain, the Eugenics Society only changed its name to the Galton Institute in 1989, and still provides financial support to the British Society for Population Studies. An organizational study of the ways that organizations from the eugenics movement have retained or

rejected links with their past activities, interests, and members, would shed light on what became of the ideas promoted by eugenicists after they became less prominent. Such a study could include similar organizations in other countries: the United States and some of the Scandinavian countries also had formal institutions that transformed to varying degrees as eugenics lost legitimacy over the years. This question could also be addressed by focusing directly on discourse, as well as organizations: investigation of contemporary debates in mass media and new media could show whether claims and arguments from interwar eugenicist thought have reappeared elsewhere in recent discourse.

The broader international context of concern over population trends is also a promising area for future research. How have French and British demographers and policymakers, located at opposite ends of the spectrum of concern, interacted over the years with their colleagues from countries in the middle of the spectrum? The international context of population concerns includes both widespread concern over a global “population explosion” in the 1960s and 1970s, and growing concern over the past few decades over European population decline. Investigating the role of French and British actors in these larger debates would help to illuminate the implications of their national differences for international discussions of fertility. How has demographic research in these two countries related to the work of American demographers, whose contributions to well-funded efforts to lower birthrates in less-wealthy countries have received more attention than the efforts of their colleagues in other wealthy countries? How has French demographic research interpreted fertility decline in high-fertility contexts, including in its former colony (and immigration source) Algeria?

Another type of international approach could examine the processes by which, in recent years, organizations such as the OECD and the European Union have developed policies on

issues related to fertility decline, including population aging and work-family balance: how have Britain and France's national approaches to fertility decline influenced the work of these international institutions? For example, as concern over low fertility has spread again to other countries in Europe, have French theories and narratives been reproduced or transformed in international contexts?

As population concerns continue to evolve in the twenty-first century, it is hoped that this dissertation's analysis of the processes that produce differences in concern about fertility can improve understandings of how and why demographic patterns become the subject of public concern and policy intervention.

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APPENDIX A: Timeline for Population Commissions

BRC—British Royal Commission

FHC—French High Committee

British events are in italics. French events are in boldface.

3/1938	<i>Population (Statistics) Act passes in Parliament</i>
2/1939	French High Committee on Population (FHC) appointed
7/1939	Family Code passed: enacts family allowances, combats “moral scourges”
9/1939	France and England declare war on Germany after invasion of Poland – “Phony War”
6/1940	Vichy Government signs truce with Germany
7-9/1940	<i>Battle of Britain</i>
11/1942	<i>Beveridge Report recommends family allowances, national health and pension systems</i>
3/1944	<i>British Royal Commission on Population (BRC) is convened</i>
9/1944	Liberation of France completed
3/1945	De Gaulle speech calls for “12 million beautiful babies ... in 10 years”
4/1945	High Consultative Committee on Population and the Family created
	BRC invites FHC for London visit
5/1945	Allied Victory in Europe
6/1945	<i>Family Allowances Act passed</i>
10/1945	National Institute for Demographic Studies (INED) founded
8/1946	Law on family payments passed, incorporating recommendations from FHC
9/1946	Meetings between BRC and FHC in London
6/1947	Meetings between BRC and FHC in Paris
3/1949	<i>Report of BRC published</i>

APPENDIX B: Members of French High Committees and British Royal Commission

Members of First French High Committee

Ferdinand Boverat	President of the <i>Alliance nationale contre le dépeuplement</i> , former businessman
Jacques Doublet (Secretary)	Councillor of State, future Director of Social Security, <i>Alliance nationale</i> member starting in 1939
Adolphe Landry	Deputy, former Minister of Labor and Social Benefits (1931); co-founder of Parliamentary “Group of Protection of Large Families,” <i>Alliance nationale</i> member
Georges Pernot	Former Minister of Public Works (1929-30) and Justice (1934-35), former Deputy, Senator, <i>Alliance nationale</i> member, President of the Federation of Associations of Large Families (Christian counterpart of <i>Alliance nationale</i>)
Frédéric Roujou (replaced by Sauvy 4/11/1940)	Master of Requests of the Council of State
Alfred Sauvy (replaced Roujou)	At the time, Director of “Institut de conjuncture” in the national statistical administration, <i>Statistique générale de la France</i>
Philippe Serre	Former Under-Secretary of State for Labor (1937-38), at time of appointment Under-Secretary of State at the Council of State

Members of Second French High Committee

Maxime Blocq-Mascart	Founder of Resistance group Civil and Military Organization
Ferdinand Boverat	Vice-President of the <i>Alliance nationale contre le dépeuplement</i>
Mme. Simone (Olry) Collet	President of the Committee of Mutual Assistance of the association The Largest Family: Association of Fathers and Mothers of Families of at least Five Children
Robert Debré	Member of the Academy of Medicine (worked on child and family health)
Mme. Marcelle Delabit	General Secretary of the Tobacco & Matches Trade Union
Adolphe Landry	former Minister of Labor and Social Benefits from Radical Party, former Deputy of the National Assembly, President of IUSSP
Dr. Maurice Monsaingeon	President of the Association of Families
Georges Mauco (Secretary)	Specialist in immigration and psychoanalyst
Robert Prigent	Minister of Population, head of the Catholic Action organization the Christian Workers’ League (for young married people, changed name in 1942 to Popular Movement of Families)
Alfred Sauvy	Academic, newly named head of INED

Sources: Nord (2010:64); Reggiani (1996:741-2); Rosental (2003a:21, 23)

Members of British Royal Commission

Alexander Carr-Saunders (Chair of Statistics Committee)	Director of LSE (1937-56), author of <i>The Population Problem</i> (1922), editor of <i>Eugenics Review</i> 1922-27
Dr. Ethel Cassie	Former senior Assistant Medical Officer of Health for maternity and child welfare at Birmingham
Lady Agnes Dollan (resigned June 1946)	Wife of ex-Lord Provost of Glasgow (1938-41)
Professor A.W.M Ellis (Chair of Biological and Medical Committee)	Professor of Medicine
Lord Cranbrook	Deputy Regional Commissioner for the Eastern Civil Defense Region
Mr. R.C.K. Ensor	Research Fellow at Oxford; historian and author
Sir Hubert Henderson (Chair starting 1946, Chair of Economic Committee)	Worked in British Treasury
Mr. J.R. Hobhouse	Partner in firm of Alfred Holt
W.A.B. (Bryan) Hopkin (Assistant Secretary)	
Mrs. Margaret Jay	Member of the London City Council (Labour Party)
Mrs. Gwen Longmoor	Wife of a West Hartlepool factory worker
Mr. Niven F. McNicoll (Secretary)	
Mrs. Gladys P. Hopkin Morris	Wife of the BBC Regional Director for Wales
Lady Mary Ogilvie	Wife of former Director-General of BBC
Mrs. Helen Pawson	Area representative of the WVS [Women's Voluntary Service to aid civilians] for Wales
Mr. Alfred Roberts	General Secretary of the Association of Card, Blowing and Ring Room Operatives [trade union]
Mr. William D. Robieson	Editor of <i>Glasgow Herald</i>
Lord Simon (Chair, resigned 1946)	Lord Chancellor in Churchill's cabinet

Source: "Population Trends in Britain" (1944:2).

APPENDIX C: Sources Used for Population Projections

France

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