In the name of the father? Fertility, religion and child naming in the demographic transition

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Abstract: This article shows that parents reveal information about their fertility behavior through how they name their children. I arrive at this finding from detailed examination of the net fertility of 130,000 married couples in Ireland circa 1910, a country known for its historically high fertility rate. After stringently accounting for the occupation, religion and location of couples, I find higher fertility rates among couples who chose distinctly Catholic names and traditional names for their children, with the latter being particularly important. Exposure to towns and cities lowered net fertility and weakened preferences for traditional and Catholic names. Cumulatively, these findings highlight the role of traditional rural norms over explicitly religious influences in driving high fertility rates in Ireland. The impact of towns and cities in reducing net fertility suggests that Ireland's sluggish urbanization was a key factor in its high historical fertility rate.

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Introduction

The decline of global fertility rates reflects one of the most profound behavioral shifts in modern history. From 1860 to 1940, the average number of live births per married woman in Britain fell from six to two (Szreter, 1996). Despite decades of research across many countries, vibrant investigation into the fertility decline continues (Beach & Hanlon, 2019; Hacker, 2020; Hacker & Roberts, 2017; Jaadla et al., 2020; Klüsener et al., 2019). This continued work reflects the many unanswered questions of how and why fertility rates decline, aided by the novel insights enabled by improving data sources (e.g. Ruggles et al., 2020).

The resistance of Ireland to the fertility decline is one of the mysteries of European demography. Despite being a close neighbor to Britain, Irish fertility rates remained strikingly high across most of the twentieth century. Estimates from the 1960s show that Catholic women in Ireland, North and South, averaged three more children across their reproductive lifespans than did women in England and Wales (Kennedy, 1973). There has been lively, albeit still unresolved, debate over the role of structural forces (Fernihough, 2017; Guinnane, 1997) relative to Catholic pronatalism (Compton, 1976; Day, 1968) in driving Ireland's peculiar demographic history.

This paper provides new insight on this old discussion by examining more than 130,000 Irish couples recorded in the recently digitized 1911 Census of Ireland. The 1911 Census was the last full enumeration of the population of the entire island, before the partition of Northern Ireland from what is now the Republic of Ireland. The 1911 Census provides significant detail on Ireland's 4.4 million inhabitants, 73 percent of whom were Catholic. With 65 percent of the population living in rural areas, Ireland's rural population share was also three times that of its neighbors England and Wales. This study leverages these data from this important period in Irish history to provide new insight on Irish fertility patterns.

My analysis focuses on how fertility patterns relate to the signals revealed in the names that parents chose for their children. Using parents' preference for distinctly Catholic children's names as a signal of religious behavior, and their selection of broadly established names as a measure of traditionalism, I examine how these two connected ideational signals relate to fertility. While I find that preferences for both religious names and traditional names are associated with higher fertility, traditional naming is a particularly powerful fertility indicator. In as far as the cultural roots of high Irish fertility go, my findings suggest that they were of a more broadly conservative nature, than anchored in personally-held religious values or attachment to Catholicism.

My examination of Irish Catholicism and demography casts light on the broader interlinkage of religion and fertility. While religiosity and pronatalist values are often correlated with fertility rates (Fernandez & Fogli, 2009; Hayford & Morgan, 2008; Okun, 2017), it is difficult to determine whether or not these associations are rooted in religious values and practice, or other correlated influences (Lehrer, 1996; McQuillan, 2004). As religiosity and religious practice tend to be stronger in more conservative contexts, particularly those that place high importance on "family values" (Vogl & Freese, 2020), it is challenging to directly distinguish religious from conservative influences. The findings from this analysis place greater weight on the role of conservatism over religiosity in shaping fertility outcomes.

This study is novel in leveraging names to understand the ideational roots of demographic behavior. While naming can provide insight on parents' ideation, identity, tastes and intentionality with respect to their children (Goldstein & Stecklov, 2021; Lieberson & Bell, 1992; Zelinsky, 1970), researchers of fertility have largely used child naming as a proxy for religious culture (Haan, 2005; Hacker, 1999). However, name choices reveal far more than religious affinity or embeddedness, and likely signal a much wider array of psychological and sociocultural processes that are of relevance to

demographers. In Ireland in the early twentieth century, for example, 75 percent of Irish boys held one of only 18 names and more than one in five newborn girls were named Mary.[1] I contend that this narrow spectrum of names reflects conservative behavioral norms and an insularity from external influences, which manifested in the reluctance of Irish parents to experiment with new names and fertility control.

Theoretical contributions on fertility decline

Mass declines in fertility rates are typically conceptualized in terms of *innovation* and *adjustment* (Carlsson, 1966). The *adjustment* perspective conceives of fertility behavior in terms of the supply and demand for children, and is principally influenced by shifts in child mortality rates, the costs of raising children, and changes in child labor laws and schooling (Easterlin & Crimmins, 1985; Guinnane, 2011). For industrializing economies, incentives are understood to increasingly favor child quality over quantity, thereby reducing aggregate fertility rates (Becker et al., 1990; Fernihough, 2017). These perspectives imply that fertility patterns are heavily shaped by economic considerations.

The *innovation* perspective, in contrast, emphasizes the destabilization of longstanding customs related to marriage, intercourse and fertility control. These changes are shaped by geographical and cultural boundaries, and are spurred by the diffusion of new knowledge, ideas, and aspirations (Bongaarts & Watkins, 1996; Coale, 1986; Lesthaeghe, 1983). The adoption of new norms and behaviors are aided by psychological shifts toward greater self-determination and away from more traditional outlooks (Cleland & Wilson, 1987). In the *innovation* view, the fertility decline is dependent

[1] Taking the United States in 1910 as a comparison, it takes more than 280 of the most common names to account for 75% of boys, and the top 18 names are spread across less than 33% of boys.

on cultural transformation and diffusion; changes that are spatial in nature and potentially detectable in how parents name their children.[2]

Both the *innovation* and *adjustment* frameworks are helpful in understanding Irish fertility patterns. The view that the cultural influence of Catholicism can account for the high fertility rate of the Irish-born is consistent with *innovation* thinking. At its extreme, this perspective would view high Irish fertility rates as a product of the persisting influence of religiosity and the Catholic Church on the sexual and contraceptive behavior of Irish couples.

Economic historians, in contrast, have rejected the view that the Irish did not limit fertility in the past, arguing instead that the Irish experience is less atypical than has previously been suggested. In addition to showing substantial evidence of fertility adjustment, Ireland's late entrance to the fertility decline could be seen as consistent with the country's modest industrialization and the higher fertility enabled and incentivized by family farming and mass rural emigration (Guinnane, 1997; Ó Gráda & Walsh, 1995). Admittedly, however, structural forces fall short in explaining the high fertility rates of regions in Ireland that were majority Catholic, or of Irish Americans relative to other ethnicities in the United States (Fernihough, 2017; Guinnane et al., 2001; Ó Gráda, 1991; Ó Gráda & Duffy, 1995).

The Harvard Irish Mission

Arensberg & Kimball's (1940) groundbreaking *Family and Community in Ireland* provides unique insight on the community-level forces affecting Irish fertility. This work, emerging from the Harvard

[2] This expectation is consistent with findings showing urban areas to be forerunners of fertility decline (Goldstein & Klüsener, 2014; Klüsener et al., 2019; Szreter, 1996) and other work that finds new information to be much more transmissible through face-to-face contact (Balland & Rigby, 2017; Storper & Venables, 2004).

Irish Mission (1932-1936), deals with many aspects of rural Irish life including family, land, work and sexual norms. The discussion of sexual norms was controversial to the extent that the *Taoiseach* of Ireland, Eamon de Valera, petitioned *Harvard University Press* to halt its publication (Byrne & O'Sullivan, 2019).

When discussing sexual norms, Arensberg and Kimball emphasized the cultural structures of rural communities over religious prescription. They specifically cast marriage and childbearing in terms of the needs and pressures of the community, where young people were raised in an "atmosphere of sex and breeding" (p. 197) and "marriages are for the purpose of producing children and assuring continuity of descent and ownership" (p. 200-201). Marriage was not built on love nor desire but through matchmaking, involving family negotiations and financial obligations. In sociological terms, the reproductive value of a woman was "completely integrated with (her) role in social life" (p. 208). Arensberg and Kimball therefore painted a picture of a traditional rural system, where social roles were deeply intertwined with reproduction.

Arensberg and Kimball also emphasize the role of the Church in regulating behavior. Local priests enforced pronatalist marital and sexual norms, as they equated "any departure from the accepted norm as a sin, a lack of religion" (p. 203). The costs of deviating from these norms were prohibitively high, as anyone breaking "the taboos surrounding sex and family, or (who) comes into conflict with the church, lays himself open not only to community condemnation but also to heavy punishment" (p. 376). Furthermore, knowledge of women's reproductive cycles or self-determination in childbearing was sharply curtailed. For Arensberg and Kimball, the influence of traditional rural norms and social structures in shaping behavior were reinforced by the community and the Church.

Data and Methods

Census extraction

I extracted the subpopulation used for this analysis from the complete-count, non-anonymized 1901 and 1911 Censuses of Ireland. These censuses are arguably the richest surviving data sources on the population of Ireland in the past.[3] The 1901 Census asked questions on residential address, name, age, sex, household relationships, occupation, marital status and birthplace. The 1911 Census is of a similar structure but asked married women additional questions including the duration and the total number of children born alive and still living from her current marriage. My analysis relies on these retrospective fertility reports from the 1911 Census. I only use the 1901 Census to measure the religious distinctiveness and the traditionality of names based on older birth cohorts.

I applied a stringent criterion to extract my subpopulation of interest from the 1911 Census. I restricted the population to women who, by 1911, were married for less than 15 years, married between the ages of 16 and 40, were co-resident with their spouse in the census and living outside of group quarters. For these women, I appended their husbands' characteristics (e.g. occupation) and removed mothers who had birthed more than 14 children. When I later compare the net fertility levels of couples in the 1911 Census of Ireland to their counterparts in the United States, I impose the same restrictions on these populations.

The 1911 Census reports provide three main windows into Irish fertility outcomes: the two retrospective questions on children ever born and children surviving, and the composition of the 1911 household. As couples may increase parity in response to the death of infants and children, I focus on

[3] The National Archives of Ireland have recently made these records searchable online http://www.census.nationalarchives.ie

the number of surviving children as my primary dependent variable ("net fertility"). As in other recent examinations of net fertility, I restricted the sample to women whose total living children matches their total number of co-resident children under the age of 14 (Dribe et al., 2017; Dribe & Scalone, 2014; Reid et al., 2020). For each couple under study, the oldest child was born within the timeframe of the current marriage. While this measure of net fertility is my preferred outcome variable, I show that my results are robust to a range of alternatives.

Unlike most complete-count census data from the United States (Ruggles et al., 2020), the Irish censuses have not been standardized and coded. Building on recent efforts (Connor, 2019; Connor et al., 2011; Fernihough et al., 2015), I manually prepared the variables used in this analysis. Husband's occupation was the only variable in which I relied on a published coding scheme. To classify occupations, I built on earlier work by Fernihough et al. (2015) to map the occupational reports in the Irish censuses to the Historical International Standard of Classification of Occupations (HISCO), which I then cross-walked to its related 12-class occupational scheme (HISCLASS) (van Leeuwen et al., 2002; van Leeuwen & Maas, 2011).

In addition to these couple-level characteristics, I also measured geographical context using Ireland's 3,588 electoral divisions (DEDs). At the DED scale, I measured the Catholic population share, the share of workers employed as clergymen and agricultural workers, the adult literacy rate, the share of children deceased to mothers married less than 15 years, and the male to female ratio. I use these characteristics to describe the local religious, occupational and demographic context for couples.

Name-based metrics

I characterized names along two dimensions: whether a name is distinctly favored by Catholics ("Catholic Index") and whether a name is traditional or commonly held by earlier generations ("Traditional Name Score"). These measures are distinctive in that the Catholic Index captures the

tendency for Catholics to pick names at higher rates than non-Catholics, while the Traditional Name Score measures the wider popularity of names in earlier generations. The reports on religion in these censuses have spurred several other recent demographic studies (Connor, 2017; Fernihough et al., 2015; Henderson, 2017; Reid et al., 2016).

To construct these two name-based measures, I extracted a large subpopulation of households from the 1901 Census of Ireland. I restricted the 1901 Census to males and females aged older than 12 in 1901, or likely born between 1801 and 1889. As the children born in these years are not included in the analysis of net fertility, this restriction alleviates endogeneity issues between the name-based metrics and couples' fertility outcomes.

I constructed the Catholic Index by following the methods of Abramitzky, Boustan, & Connor (2020) in their creation of an index of Jewishness, which is itself based on the method of Fryer & Levitt (2004). The Catholic Index is defined as:

$$\textbf{(1)} \qquad \textbf{Catholic Index}_{name} = \mathbf{100} \cdot \frac{\frac{\#catholic_{name}}{total\ \#\ catholic}}{\frac{\#catholic_{name}}{total\ \#\ catholic} + \frac{\#other\ religion_{name}}{total\ \#\ other\ religion}}$$

where the numerator is the proportion of Catholics holding a given name, and the denominator is the sum of the proportion of Catholics holding a given name with the proportion of non-Catholics holding that same name. The Catholic Index ranges from zero to one hundred, with a zero reflecting that no Catholics held the name in question and a value of 100 indicating that only Catholics possessed that name. As this is a *relative* measure, the index is not likely to be highly skewed by the fact that the population was majority Catholic.

I then used the following formula to measure the degree to which a name was widely held by earlier generations:

$$\textbf{(2)} \qquad \textbf{Traditional Name Score}_{name} = \frac{total\ \#name_i}{(\frac{total\ \#\ names}{N})}$$

where the numerator is the total number of individuals holding name *i* and the denominator is the average number of people per name in the population (439). Thus, the Traditional Name Score is a direct measure of how overrepresented a name is in the population relative to the average name.

With these measures, I characterized the names of children who were aged 14 or younger in 1911 (likely born between 1897 and 1911) and whose parents meet the criteria described above. While one might be concerned that the Catholic Index and the Traditional Name Score capture the same phenomena, the correlation coefficient is actually quite modest (+0.15). The variation between these two measures is supported by **Table 1**, which lists the 30 most common names given to sons and daughters in this analysis. The two most common names, Mary and John, score at 64 and 57, respectively, on the Catholic Index. These index values imply that while Catholics disproportionately named their children Mary and John, these names were also commonly held by non-Catholics. Furthermore, the two most distinctly *Catholic* names, Bridget and Patrick, score similarly along the Traditional Name Score as distinctly *non-Catholic* names like William and Sarah.

A comparison of four popular girls' names further elucidates these differences. The names Bridget and Sarah have values over 100 on the Traditional Name Score, suggesting that they had been popular over an extended period of time. In both cases, the average age of women named Bridget or Sarah is 34. However, Bridget scores substantially higher on the Catholic Index than Sarah (99 versus 23), reflecting that 99 percent of women named Bridget were Catholic but only 54 percent of Sarahs were Catholic.

Table 1. The 30 most common first names for sons and daughters, ordered by frequency

30 most common names for daughters				30 most common names for sons			
First name	**Catholic index**	**Traditional name score**	**Cumul. Share**	**First name**	**Catholic index**	**Traditional name score**	**Cumul. Share**
Mary	64	988	0.23	John	57	739	0.16
Bridget	99	337	0.28	Patrick	98	432	0.26
Margaret	55	274	0.34	James	50	483	0.35
Annie	39	165	0.38	William	25	308	0.43
Ellen	69	232	0.42	Thomas	54	357	0.50
Elizabeth	27	128	0.45	Michael	98	308	0.57
Maggie	42	128	0.48	Robert	7	119	0.59
Catherine	78	188	0.50	Joseph	42	115	0.62
Sarah	23	156	0.53	Edward	63	97	0.64
Kathleen	50	21	0.55	Daniel	86	78	0.66
Kate	90	157	0.57	George	13	67	0.67
Lizzie	32	87	0.58	Peter	94	77	0.68
Jane	19	116	0.60	Samuel	3	58	0.70
Anne	76	154	0.61	Francis	61	58	0.71
Julia	92	67	0.62	David	16	52	0.72
Agnes	18	47	0.63	Martin	96	59	0.73
Rose	82	59	0.64	Charles	40	56	0.74
Norah	89	32	0.65	Hugh	38	58	0.76
Hannah	64	48	0.66	Denis	98	52	0.77
Alice	52	47	0.67	Richard	44	54	0.78
Katie	92	39	0.68	Henry	26	48	0.79
Nora	90	26	0.68	Timothy	98	41	0.79
Eileen	28	4	0.69	Bernard	97	37	0.80
Johanna	97	39	0.70	Andrew	33	38	0.81
Margret	51	44	0.71	Jeremiah	95	28	0.82
Martha	7	38	0.71	Christopher	79	18	0.82
Eliza	29	85	0.72	Alexander	6	29	0.83
May	35	11	0.72	Willie	35	11	0.83
Susan	36	37	0.73	Arthur	26	17	0.84
Christina	62	11	0.73	Cornelius	98	18	0.84

Notes: A list of the 30 most common first names given to sons and daughters with parents married less than 15 years and born between 1897 and 1911. The names are ordered by frequency.

Contrastingly, Eileen and Nora are examples of names that were growing in popularity in the early twentieth century. The average age for women named Nora was 26 and the average age for Eileen was only 11. The concentration of these names among more recent birth cohorts explains their relatively low value on the Traditional Name Score. Notably, however, the Catholic share of the population was 97 percent for the name Nora (Catholic Index = 90) but only 74 percent for the name Eileen (Catholic Index = 28). From these four examples then, Bridget and Nora were more common names among Catholics, with the latter growing in popularity, while Sarah and Eileen were more widely spread by religion, but Eileen was a more up-and-coming name.

The descriptive statistics presented in **Table 2** provide further insight into how child naming differed by religion. At 65.38, the average Catholic Index for children's' names is highest in Catholic families and roughly twice the level of the other four denominations. This means that Catholics were more likely than others to choose names that were more common in earlier generations of Catholics. While there is some variation across other denominations – Presbyterians were less likely to choose distinctly Catholic names than Anglicans – the differences are not substantial.

Group differences in traditional naming can be assessed from both the Traditional Name Score and the proportion of parents giving their own names to their sons ("patronyms") or daughters ("matronyms"). With the exception of Jewish households, patronymic or matronymic behavior was quite widespread. Roughly 20 percent of non-Jewish first sons and 10 percent of non-Jewish daughters were given the names of their parents. An interesting minor point is that not a single Jewish parent in the study chose their own name for their first child, a behavior that likely reflects the reluctance of Ashkenazi Jews to name their children after the living.

There is substantially more variation by religion in the Traditional Name Score. Catholics choose the most common names on average for their children, while Presbyterians chose the least common

names. Anglicans, Jews and others were similarly likely to choose traditional names. The fact that Jews appear to score high on the Traditional Name Score reflects their preference for well-known biblical names: Jewish couples favored established names that were relatively uncommon in Ireland like Abraham, Leah and Isaac, and also more popular names in Ireland like Sarah, Annie, Joseph and Samuel. Withstanding these differences, the most notable feature of traditional naming is that Catholics preferred names that were disproportionately chosen by earlier generations of Catholics, and also names that were more common in the population as a whole.

In addition to these naming practices, **Table 2** provides insight on broader denominational differences in net fertility. Despite marrying at older ages (Dixon, 1978), Catholics had higher net fertility than Presbyterians, Anglicans and other denominations. Only the small number of Jewish households in the data have higher average net fertility than Catholics, a pattern that has previously been examined in detail (see Ó Gráda, 2006). These statistics also highlight that due to the very low rates of religious intermarriage - less than two percent for Catholics - it is unlikely that mixed marriages can provide substantial insight into Irish fertility behavior (Fernihough et al., 2015).

Finally, **Table 2** illustrates the class-based nature of religion in Ireland. While 67% of Catholic households were headed by unskilled and agricultural workers, that number was only 41% for Anglicans, 45% for Presbyterians and as low as 4% for Jews. Illiteracy was substantially higher for Catholic and Jewish couples, but in the case of the latter, this likely reflects a lack of English fluency rather than functional illiteracy. Each of these patterns are consistent with the place-level (DED) characteristics: Catholics disproportionately lived in places with more Catholics, higher illiteracy and greater concentrations of unskilled and agricultural workers. The greater rurality and lower socioeconomic status of Catholics underscores the necessity of using a regression framework to understand fertility differences in this context.

Table 2. Descriptive statistics by religion of mother

	Religion of wife/mother				
	Catholic	Anglican	Presbyterian	Jewish	Other
Wives/mothers (N)	92,793 (71%)	18,543 (14%)	14,849 (11%)	205 (1%)	4,206 (3%)
Net fertility	3.09	2.66	2.75	3.17	2.67
Children ever born	3.51	2.99	3.06	3.35	2.99
Years married	7.27	7.24	7.31	7.84	7.37
Age at marriage	25.79	24.54	24.59	21.54	24.70
Literacy of couple	0.92	0.95	0.97	0.73	0.94
Mixed religion marriage	0.01	0.04	0.02	0.01	0.15
Children (N)	285,820 (73%)	49,222 (13%)	40,645 (10%)	652 (1%)	12,537 (3%)
Catholic Index	65.38	30.45	25.57	30.74	33.57
Traditional Name Score	339.76	189.18	33.98	216.75	203.34
Patronym, first son	0.16	0.22	0.22	0	0.20
Matronym, first daughter	0.12	0.09	0.09	0	0.09
Husbands/fathers					
Occ: High prof, managers	0.03	0.06	0.05	0.07	0.05
Occ: Low prof, managers, clerical	0.09	0.16	0.15	0.57	0.19
Occ: Foremen, skilled workers	0.12	0.19	0.22	0.29	0.26
Occ: Farmers, fishermen	0.37	0.17	0.22	0.00	0.17
Occ: Lower skilled workers	0.10	0.18	0.14	0.03	0.18
Occ: Unskilled workers	0.17	0.14	0.13	0.04	0.10
Occ: Skilled & unskilled farm	0.13	0.10	0.10	0.00	0.04
DED of residence					
Catholic share	0.84	0.45	0.25	0.63	0.36
Clergy share	0.01	0.01	0.01	0.01	0.01
Agricultural share	0.48	0.29	0.30	0.03	0.22
Literate share	0.83	0.87	0.88	0.89	0.88
Child mortality share	0.12	0.13	0.12	0.17	0.13
In-migrant share	0.21	0.33	0.31	0.41	0.38
Male to female ratio	1.01	0.91	0.88	0.82	0.88

Notes: Descriptive statistics by self-reported religion. The sample is restricted to mothers married less than 15 years with spouse present, aged 16-49, married between ages 16-40, and where the mother has experienced no infant or child mortality. The sample is restricted to children whose mothers match the criteria above and where the child is under the age of 15 and observed within the 1911 household. Primary demographic characteristics are reported for the wives or mothers, occupations are measured for their husbands ("OCC"), and the characteristics of children are measured within the 1911 household. In the interest of space, this table shows the shortened seven class version of the HISCLASS occupational codes, but the main analysis relies on the more detailed twelve class version. District Electoral Divisions ("DED") are used to measure geographical context.

Results

Regression of fertility on child naming

The main goal of this regression analysis is to determine the relationship between naming and fertility, and the robustness of these relationships to economic forces. I do this by testing how fertility relates to religious behavior, as signified by the choosing of distinctly Catholic names, and to more general signals of traditionalism, as revealed in picking either ones' own name or very common names for children. I adjust for potentially correlated influences such as local labor market conditions or occupation using a stringent set of control variables (described below).

Table 3 presents estimates of these relationships for net fertility (**Col. 1-3**) and parity (**Col. 4-6**). These coefficients are estimated from a series of Ordinary Least Squares (OLS) regression models of the following basic form:

$$(3) \qquad \boldsymbol{Y(fertility_j) = a + B_1(\overline{catholic\ index_{ij}}) + B_2(\overline{trad.\ name\ score_{ij}}) + \sum_{k=1\ldots k} B_k X_k + e_j}$$

where *fertility,* referring to either net fertility (total surviving) or parity (children ever born), is measured for couples *j* that were married for fewer than fifteen years and in which all surviving children were co-resident with the couple in 1911. The primary variables of interest are the Catholic Index and the Traditional Name Score, which are calculated based on the names of children *i* observed inside the household of couple *j*. These variables are log transformed to adjust for skewness. **Appendix Table 1** shows that the main results hold irrespective of whether they are modelled within an OLS or a Poisson estimation framework.

As there is a structural relationship between net fertility and exposure to intercourse, the *k* control variables include single-year fixed effects for age at marriage and year of marriage. I stringently account for socioeconomic differences and other correlates with these *k* variables, which include parental religion, husband's occupation and DED of residence. With over 3,000 separate geographical divisions

for a population of less than five million, the DED of residence is quite a strong control by the standards of even contemporary studies. I also adjust for possible differences by migrant status using indicators for mothers' county of birth and whether a mother lived outside of her county of birth.

The main coefficients of interest can therefore be interpreted as the expected change in net fertility associated with parents' choice of more Catholic or more traditional names for children born to women who were married at the same age and in the same year, and with the same religion, occupation, location and birthplace. If Catholic or traditional names are associated with higher net fertility, we would expect $\boldsymbol{B} > 0$.

I begin by estimating the association between the average Catholic Index of children's names and net fertility while only adjusting for martial duration and age at marriage (**Column 1**). The coefficient in **Column 1** is large and positive, showing that a one-unit increase in the log of the Catholic Index of children's names is associated with a 0.245 increase in net fertility.[4] This sizeable significant coefficient unambiguously implies that Catholic naming is highly correlated with net fertility at the couple level, meaning that net fertility was not just correlated with Catholic naming because people who chose Catholic names coincidentally lived in communities that otherwise had high fertility.

[4] An increase in the Catholic Index of this magnitude is commensurate with choosing names like Patrick or Bridget (high Catholic Index) over names like Samuel or Isabella (low Catholic Index).

Table 3. Regression estimating the association between name choice and fertility outcomes circa 1911

	Y = Net fertility			*Y = Parity*		
	(1)	(2)	(3)	(4)	(5)	(6)
Catholic Index, children (ln)	0.245***	0.109***	0.0703***	0.297***	0.166***	0.0812***
	(0.006)	(0.007)	(0.008)	(0.007)	(0.008)	(0.009)
Trad name score, children (ln)		0.0908***	0.0897***		0.0866***	0.0820***
		(0.002)	(0.002)		(0.003)	(0.003)
Patronym, first son		0.0866***	0.0976***		0.108***	0.121***
		(0.009)	(0.009)		(0.010)	(0.010)
Matronym, first daughter		0.119***	0.123***		0.134***	0.136***
		(0.012)	(0.012)		(0.013)	(0.013)
Religion [ref = Catholic]						
Anglican			-0.126***			-0.231***
			(0.014)			(0.016)
Presbyterian			-0.149***			-0.276***
			(0.016)			(0.018)
Jewish			0.566***			0.136
			(0.119)			(0.132)
Other			-0.135***			-0.274***
			(0.022)			(0.024)
Mixed marriage			-0.0549*			-0.0232
			(0.026)			(0.029)
Observations	130596	130596	130596	130596	130596	130596
Observational unit	Couples	Couples	Couples	Couples	Couples	Couples
R-squared	0.476	0.484	0.489	0.522	0.527	0.531
Controls						
Marital duration	Y	Y	Y	Y	Y	Y
Age at marriage	Y	Y	Y	Y	Y	Y
Catholic Index, couple	N	N	Y	N	N	Y
County of birth	N	N	Y	N	N	Y
Migrant status	N	N	Y	N	N	Y
Husband's occ.	N	N	Y	N	N	Y
Literacy	N	N	Y	N	N	Y
DED FE	N	N	Y	N	N	Y

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, Robust standard errors in parentheses

Notes: OLS regression estimates of the association between name choice, net fertility and parity. The sample is restricted to mothers in 1911 who were married for less than 15 years with spouse present, aged 16-49, and married between ages 16-40. The independent variables of interest related to naming are measured from children within the household who were under the age of 15. These estimates are based on the model described in Equation 3.

Column 2 introduces measures of traditional naming as both a control variable and for direct comparison to the coefficient on the Catholic Index. A one-unit increase in the natural log of the Traditional Name Score is associated with around a 0.09 increase in net fertility. Naming ones' first child after their mother or father is associated with similar increases in net fertility. Interestingly, the coefficient associated with naming a first daughter after her mother is around a third larger than is the coefficient for naming ones' first son after his father, perhaps because matronyms were a particularly strong signal of traditionalism. Irrespective of this difference, these coefficients reveal that parents who relied on more traditional names also tended to have larger families.

The addition of the traditional naming measures to the model has implications for the already established link between Catholicism and fertility. After adding these variables, the coefficient on the Catholic Index attenuates by more than a half to 0.109. This implies that much of the correlation between Catholic naming and fertility is driven by the fact that many distinctly Catholic names were also quite traditional, and traditional naming was also correlated with fertility.

Column 3 introduces the large battery of control variables including the location (DED), religion and occupational class of the couple. After adjusting for these differences, the coefficient on the Catholic Index attenuates by another 35 percent to 0.07, suggesting that a sizeable portion of the association between Catholic naming and fertility is rooted in broader differences along these dimensions. Somewhat surprisingly, the coefficients for traditional naming remains largely unchanged, implying that while broader economic and sociocultural factors related to location, occupation and religion can explain substantial shares of the link between Catholic naming and fertility, they account for much less variation with respect to the interlinkage of traditional naming and fertility.

Naming aside, there are still evident fertility differentials by religious denomination that withstand these control variables. Anglicans and Presbyterians have significantly lower net fertility than Catholic

and Jewish couples. Mixed marriage couples also have lower fertility on average. These estimates imply that even though the association between fertility and religion is not fully captured in the naming decisions of parents, religious and traditional naming are tightly interlinked with fertility patterns. As the findings for net fertility largely mirror those for parity (**Columns 4-6**), I show the coefficients for parity but do not interpret them in any detail.

Decomposition by religion and urban status

What should we infer from these robust associations between net fertility and traditional and Catholic naming? We can gain further insight on what these relationships signify by estimating these models separately, by religious denomination. If Catholic naming is a genuine signal of Catholic values or of the influence of the Catholic Church and its followers, we might expect preferences for distinctly Catholic names to be correlated with fertility irrespective of the couple's religious denomination. The presence of such a relationship for non-Catholics would imply that these couples either had Catholic leanings or were interacting with Catholics, and adopting Catholic behavioral norms by doing so. There is no obvious reason to think that the relationship between traditional naming and fertility would vary by religious denomination.

I test these hypotheses in **Table 4,** which presents estimates from a similar set of models to those in **Table 3** but where the observations are split by religion. The first notable finding here is that the estimated effect of traditional naming on fertility is highly consistent by religious denomination: a log increase in the Traditional Name Score of children is generally associated with a 0.09 to 0.10 increase in net fertility. Despite some variation in the relative size of the coefficients, the association between patronymic and matronymic naming and fertility is also consistent in direction across the different splits, with more traditional naming being consistently and positively correlated with net fertility.

Table 4. Regression estimating the association between name choice and fertility outcomes circa 1911, with observations splits by religion and urban status

	Catholic	Anglican	Presbyterian	Other/Jewish
	(1)	(2)	(3)	(4)
Catholic Index, children (ln)	0.157***	0.00505	-0.0200	0.0392
	(0.013)	(0.015)	(0.018)	(0.035)
Trad name score, children (ln)	0.0866***	0.0992***	0.110***	0.0954***
	(0.003)	(0.005)	(0.007)	(0.012)
Patronym, first son	0.0844***	0.0813***	0.174***	0.144**
	(0.012)	(0.024)	(0.026)	(0.054)
Matronym, first daughter	0.107***	0.218***	0.148***	0.211*
	(0.013)	(0.036)	(0.038)	(0.084)
Observations	92793	18543	14849	4411
Observational unit	Couples	Couples	Couples	Couples
R-squared	0.508	0.493	0.475	0.554
Controls				
Marital duration	Y	Y	Y	Y
Age at marriage	Y	Y	Y	Y
Catholic Index, couple	Y	Y	Y	Y
County of birth	Y	Y	Y	Y
Husband's occ.	Y	Y	Y	Y
Literacy	Y	Y	Y	Y
DED FE	Y	Y	Y	Y
Mixed marriage	Y	Y	Y	Y
Migrant	Y	Y	Y	Y
Religion	N	N	N	N
Urban status	Y	Y	Y	Y

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, Robust standard errors in parentheses

Notes: OLS regression estimates of the association between name choice and net fertility with observations split by religion and urban status. Due to small sample size, Jewish couples are grouped with "others". The sample is restricted to mothers in 1911 who were married for less than 15 years with spouse present, aged 16-49, and married between ages 16-40. The independent variables of interest related to naming are measured from children within the household who were under the age of 15. These estimates are based on the model described in Equation 3.

The consistency of the traditional naming coefficients across these models stand in stark relief to those of the Catholic Index. Among Catholics, a log increase in the average Catholic Index of children's names is associated with a 0.157 increase in net fertility. There is however no notable association between Catholic naming and net fertility for any other religious denomination: in every case, the coefficient is close to zero and not statistically significant. That is, non-Catholics who preferred distinctly Catholic names for their children do not show any elevation in fertility. This

implies that the wider link between Catholic name choices and fertility in the Irish population was driven *exclusively* by the behaviors of Catholics.

There are two potential explanations for why Catholic naming is only associated with higher fertility for Catholics. One possibility is that Catholics who revealed strong preferences for Catholic names were particularly religious and strongly adhered to the naming conventions and pronatalist teachings of the Church. Alternatively, the choice of Catholic names among Catholics could simply be another form of conservative behavior or traditionalism, wherein these names were well established and highly accessible for Catholics. In this case, non-Catholics who preferred distinctly Catholic names could, in fact, be revealing their openness and willingness to experiment by selecting names from outside their immediate social and cultural circles. For now, however, these hypotheses are purely speculative.

Explanatory power of naming

In assessing the importance of naming with respect to fertility patterns, we are not only interested in effect sizes, but also the ability to account for variation in fertility in the population. **Table 5** presents the R-squared values for seven separate regression models, where net fertility is the dependent variable and the models differ by the inclusion of different variable blocks. The starting point in this comparison is to note that the full regression model (see **Column 3**, **Table 3**) has an R-squared of roughly 0.49, or jointly, our main variables of interest explain around 49 percent of the variation in net fertility. Most of this variation is explained by the exposure indicators of age at marriage and marital duration.

Table 5. Share of variation in net fertility explained by variables of interest

Variable group	Variables in group	R^2	Adj. R^2
Full model	• All variables listed above	0.489	0.473
Marital	• Age at marriage • Marital duration	0.418	0.418
Location & birthplace	• DED of residence • County of birth	0.068	0.040
Traditional naming	• Traditional Name Score, children • Patronym, first son • Matronym, first daughter	0.049	0.049
Religion	• Catholic Index, children • Religion • Mixed marriage	0.025	0.025
Socioeconomic status	• Occupation of husband • Literacy of parents	0.020	0.020
Migrant status	• Intercounty migrant • Foreign-born	0.010	0.010

Notes: R-squared and adjusted R-squared values for regressions based on separate groups of independent variables of interest. The R-squared values in Table 5 are generated from seven separate OLS regression models where net fertility is the dependent variable, and the independent variables are the variables listed in the "Variables in group" column. The sample is restricted to mothers in 1911 who were married for less than 15 years with spouse present, aged 16-49, and married between ages 16-40. The independent variables of interest related to naming are measured from children within the household who were under the age of 15.

However, the most revealing aspect of this analysis is the contrast between traditional naming and religion. While the religious denomination and religious naming patterns of the couple have a value of only 0.025, the three measures of traditional naming have an adjusted R-squared value of 0.049. Thus, compared to religion, the traditional naming measures explain almost twice as much variation in net fertility. Moreover, the traditional naming block has a higher adjusted R-squared value than either the location and birthplace variables, or of those relating to socioeconomic status. This means that these traditional naming measures have greater power in accounting for fertility differentials than classically studied proximate determinants like location, socioeconomic status, or religion.

Robustness checks on regression analyses

I demonstrate the robustness of these regression estimates through a series of alternate specifications. These checks are estimated through four regression models in **Appendix Table 1**, where the specification largely mirrors that shown in Equation 3.

First, my main analytical specification characterizes naming based on all valid children in the household. This decision was motivated by the fact that parent's preferences for particular types of names will be measured more precisely when observed across multiple children. This is particularly true when first children are more likely to receive patronyms or matronyms. However, the use of all children in the household could introduce an endogeneity bias if parents' preferences for particular names change based on their total number of children (Goldstein & Stecklov, 2021). To ensure that such circularity is not driving my findings, Panel A of **Appendix Table 1** estimates the main specification, but where the variables of interest are only measured from the name of the first-born child in each household. Even after imposing this restriction, I find significant positive relationships for the selection of Catholic and traditional names on net fertility. Although the effect sizes are smaller than before, the main relationships hold.

Second, net fertility is a count variable and such measures can be sensitive to estimation strategy. Although I relied on OLS models, the skewness and potential non-normality of the residuals on net fertility may lead one to prefer a Poisson framework. In Panel B of **Appendix Table 1**, I use the Poisson framework: the results are once again very similar to the main regression models and would not lead to any difference in inference. Thus, I prefer the OLS to a Poisson model due to its more accessible interpretation and computational efficiency, particularly given the large number of fixed effects included in these models.

Third, I measure net fertility using children in the household up to the age of 14. This could introduce a bias if children selectively left home at younger ages, a process that I cannot observe. To ensure that such selectivity is not severely biasing my estimates, I estimate the main specification but where I restrict the population to recently married couples (married less than five years). Once again, all relationships match those from the main analyses.

Finally, I constructed the Catholic Index by linking first names to the reported religion of adults in the 1901 Census. The construction of the Catholic Index deviates from Hacker (1999), who instead measured religiosity using names from the Bible. I decided against using Biblical names, as the religious norms of Catholics in Ireland differ from Catholics elsewhere, and the Irish census provides an opportunity to more directly measure this distinctiveness. Panel D of **Appendix Table 1** presents estimates from a model where I replaced the Catholic Index for the names of children with the proportion of children in the household possessing a Biblical name. This is the only situation where I find a substantially different result: Biblical naming is negatively associated with net fertility in Ireland. The most likely explanation for this difference is that Biblical names diverge from common Irish Catholic names. While Mary, for example, is a Biblical name, Patrick is not. Moreover, several higher status names in Ireland like Sarah and Elizabeth would be considered to be Biblical, yet were not widely held by Irish Catholics. This finding raises further doubts over the role of formal theology as the driver of Irish fertility behavior.

Contextualizing Irish fertility patterns

The regression analyses reveal strong relationships between ideational and cultural signals and fertility outcomes. To better understand the source of these relationships, I provide two final descriptive analyses on the spatial patterning of fertility and naming patterns within Ireland, and a comparison of net fertility between Ireland and the United States. The link between naming and fertility could largely

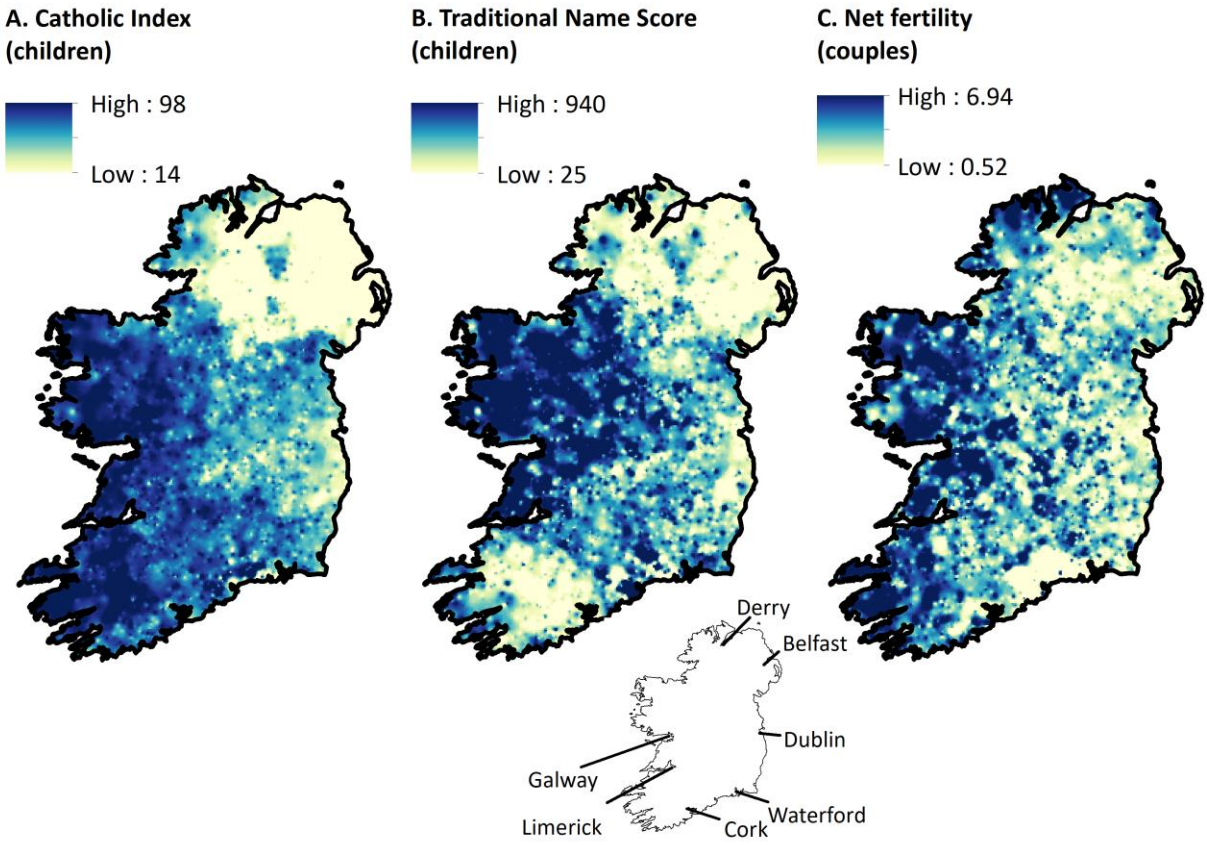
be idiosyncratic and attributable to random personality differences related to risk aversion, openness, or creativity. If this was the case, we might not expect to find strong spatial patterns in these behaviors. On the other hand, if contextual forces are acting on fertility and naming behaviors, we would expect these behaviors to cluster in particular places.

Figure 1 maps net fertility and naming decisions across Ireland in the early twentieth century. These surfaces - based on the centroids of DEDs - show the average values of children's names on the Catholic Index (**Panel A**) and the Traditional Name Score (**Panel B**), along with the average net fertility levels of couples (**Panel C**). These estimates are derived from the subset of the population described in the census extraction above.

Panel A reveals that couples living in the largely rural and Catholic communities along the West and Southwest of Ireland were most likely to choose Catholic names. Contrastingly, parents living near major cities like Dublin and Belfast or in the counties to the North, more generally, were less likely to give their children Catholic names. These northern regions and major urban centers were not only more developed economically but also less Catholic on average.

The selection of traditional names shown in **Panel B** follows a somewhat similar pattern to those for Catholic naming. Less traditional name choices were common in the Northern counties of Ireland, and in proximity to Dublin and Belfast. Furthermore, and again in line with Catholic naming, couples in the Western counties of Ireland were more likely to choose traditional names for children. One notable deviation is that there seems to have been a preference for less traditional names in the Southwest of the country, particularly around the counties of Cork and Kerry. Except for this discrepancy, however, there is substantial overlap in the geography of traditional and Catholic child naming.

Figure 1. Geography of naming behaviors and net fertility in Ireland, circa 1911



Note: Three maps of the (A) Catholic Index of children's names, (B) Traditional Name Score for children's names, and (C) net fertility circa 1911. A fourth map is inserted for reference to Ireland's major coastal urban areas. The populations used to construct these maps are restricted to households where the mother is co-resident with her spouse, currently married for less than 15 years, aged 16 to 49 in 1911, not in group quarters, and aged 16 to 40 at marriage. These surfaces were created by interpolating the average values of district electoral division centroids, of which there were over three thousand in 1911. Alan Fernihough very kindly shared these electoral division coordinates with me.

Taking these panels in combination with **Panel C** reveals strong spatial correlations between naming patterns and fertility. Couples in urban areas and the eastern regions of Ireland exhibit lower net fertility on average. Net fertility is high however in the same Western counties that favored more Catholic and traditional names. As naming is primarily a product of culture, these patterns suggest that local contexts which fostered deviance from traditional naming also encouraged greater fertility control.

It could be that these naming and fertility behaviors reflect the self-selection or "sorting" of migrants across places. More adventurous people may have moved to cities, and the personalities and motivations of migrants may have also pre-disposed them to restrict their fertility. Recall above, however, that the association between naming and net fertility withstood stringent controls for location, migration and occupation, suggesting that the movement of people with particular personalities is not likely to be driving these patterns. The more plausible explanation is that local contexts were reshaping fertility and naming behaviors.

What contextual influences were driving these patterns? We can gain some insight on this question from **Appendix Figure 1**, which shows the correlation coefficients of the characteristics of places with the naming and fertility measures. These correlation coefficients for place characteristics move in a similar direction irrespective of whether they refer to naming or fertility outcomes. The presence of farming, Catholic population shares and male-to-female ratios are positively correlated with traditional naming, Catholic naming and net fertility. Contrastingly, literacy and in-migration rates – indicators of urbanization – are negatively correlated with these behaviors. The salient contextual distinction therefore appears to be between urban areas on the one hand, and areas that were rural and majority Catholic, on the other.

Table 6 takes one final analytical view at this issue by leveraging the complete-count 1910 Census of the United States from the Integrated Public Use Microdata Series (Ruggles et al., 2020) to examine fertility and naming patterns across comparable couples in Ireland and abroad. This comparison gives a sense for how couples may have adjusted their fertility behavior with migration and exposure to the United States, while also providing a more general benchmark for fertility patterns in Ireland. **Table 6** reveals several striking patterns in terms of both fertility and naming. The most notable finding is the progressive decline of net fertility as one figuratively moves farther away from Rural Catholic

Ireland. Rural Catholic couples in Ireland who were married less than 15 years had averaged 3.13 children by 1911. Consistent with the maps above, rural non-Catholics and urban-dwellers in Ireland had substantially lower net fertility, in the range of 2.5 to 2.8 children. Thus, separately and in combination, being Catholic or living in an urban area was associated with substantial reductions in fertility.

Table 6. Net fertility and child naming in Ireland and the United States

	Net Fertility (couple)	Traditional Name Score (children)	Catholic Index (children)
Ireland, Rural Catholic	3.13	367	68
Ireland, Rural Non-Catholic	2.79	220	32
Ireland, Urban Catholic	2.72	320	60
Ireland, Urban Non-Catholic	2.52	196	30
USA, born in Ireland (wife & husband)	2.64	317	52
USA, born in Ireland (wife only)	2.39	212	40
USA, other foreign born (wife only)	2.35	105	34
USA, born in the United States (wife only)	2.05	80	25

Notes: A comparison of net fertility based on children born within the first 15 years of marriage from the 1911 Census of Ireland and the 1910 Census of the United States. The underlying populations are based on reporting women who, in the year of observation, were currently married for less than 15 years, aged 16 to 49, not in group quarters, and aged 16 to 40 at marriage. For Ireland, urban areas are classified as DEDs where less than 20 percent of labor force is employed in agriculture. To facilitate comparison with Irish immigrants, the US population is restricted to whites living in New England, the Middle Atlantic and the East North Central census divisions.

The fertility outcomes of the Irish-born in the United States are also revealing. As emigrants from Ireland to the United States in this period were heavily drawn from Irish regions that were largely Catholic, rural, and which had high fertility rates (Connor, 2019), their fertility outcomes in the USA are of particular relevance. Couples in the United States in which both husband and wife were Irish-born had an average net fertility level of 2.64. Average net fertility was lower again at 2.33 for Irish-born women who married men born outside of Ireland. While these reductions are sizeable, Irish-

born women in the United States still exhibited higher net fertility than their US- or foreign-born counterparts in the United States. High Irish fertility thus persisted in some measure in the United States, but the emigrants themselves exhibited lower fertility levels than their counterparts who stayed in Ireland.

Importantly, these fertility patterns roughly follow similar declines in couples' preference for traditional and distinctly Catholic Irish names. The Traditional Name Score of 367 is at its highest for rural-dwelling Catholic couples, and drops to 320 for urban-dwelling Catholics. Although non-Catholic couples were generally less likely to choose traditional names, the average Traditional Name Score for non-Catholic couples also drops from 220 to 196 between rural and urban areas. Moreover, Irish-born parents in the United States have a Traditional Name Score of 317, a very similar value to that of urban-dwelling Catholics in Ireland. There are similarly sized reductions in Catholic naming across these different cuts of the data. These differences underscore that the correlation between fertility and naming even holds when one considers the Irish in the United States. The fact that the Traditional Name Score is only 212 for Irish-born women in the United States who married non-Irish men *could* reflect a cultural effect of out-marriage, but we cannot be sure as out-marriage was also a highly selective process.[5]

Although these data provide no direct evidence on the psychological processes governing fertility and naming decisions, Arensberg and Kimball do provide some speculative observational insight. They argued for the prominence of traditionalism with respect to marital and sexual norms in rural communities, and the disruption of these norms through urbanization. Urban life inculcated

[5] We cannot make any reasonable inference with respect to these Irish naming measures for couples who are born outside of Ireland.

substantial psychological and cultural shifts, as rural values weekend with the "increasing acceptance of urban values and behavior" (p. 376). In particular, parents' aspirations shifted from farming and land to the "future careers of sons and the marriage prospects of daughters" (p. 376). My findings suggest that this shift in parents' aspirations for their children may be observed in how exactly they named their children. Specifically, names linked to continuity, descent and tradition were replaced by names of a more modern and urban flavor, signaling the transition from the farm to the city.

With respect to Catholicism and fertility, my findings are consistent with demographic theory. Demographers emphasize that community influences regarding gender inequality, family and sexual behavior, and the ability for the Church to enforce behavior, play a greater role in shaping fertility than do theology or religious culture (Goldscheider & Mosher, 1991; McQuillan, 2004; Yeatman & Trinitapoli, 2008). This view is consistent with the particularly pronounced fertility levels of closely-knit rural Catholic communities that I have shown here, and with the accounts of Arensberg and Kimball. My findings also highlight the greater potential salience of traditionalism over Catholicism in explaining high historical fertility rates in Ireland.

Conclusion

The global decline of fertility reflects one the most profound behavioral shifts in modern human history. It is argued that these changes were rooted in mass shifts in values, attitudes and deliberate birth control (Carlsson, 1966), and cultural changes that shifted people away from traditional and religious constructs and toward self-determination (Bongaarts & Watkins, 1996; Lesthaeghe & Surkyn, 1988; Spolaore & Wacziarg, 2019). I provide new and consistent evidence on this issue from Ireland, a historical outlier in its slow fertility decline. My analysis reveals a strong and highly robust relationship between traditionalism (inferred from naming) and fertility. Urban environments appear to have played a key role in attenuating net fertility and traditional naming patterns, perhaps because cities

enabled new information and aspirations to spread, which had further implications for consequential behaviors like fertility control and less consequential behaviors like child naming.

These findings are notable because explanations of high fertility in Ireland are often cast between the influence of the Roman Catholic Church on the one hand, or of more voluntaristic decisions that were guided by economic circumstances on the other. My findings complement both views but do not support either one in isolation. While my main contribution is in revealing strong links between cultural signals and fertility, these cultural signals appear to have been rooted in traditionalism and conservatism rather than explicitly religious predilections. The shift away from traditional norms was tightly woven with forces of economic development and urbanization. Urbanization brought about economic pressures and sociocultural shifts that disrupted rural and religious norms, and which ultimately lowered fertility. Conversely, the coupling of Ireland's sluggish urbanization with persistently high fertility in more traditional rural communities should be at the center of any account of the country's reluctant participation in the European fertility decline.

Finally, this analysis was enabled by the growing availability of historical census data and new methods in the analysis of child naming. Complementing other work that leverages historical microdata to study behavior and fertility (Guinnane et al., 2006; Jaadla et al., 2020; Klüsener et al., 2019), naming is a compelling and increasingly analyzable behavior with respect to demographic change. The value of using names to understand population patterns is underscored by prior analyses of how naming relates to fertility behavior (Goldstein & Stecklov, 2021; Hacker, 1999), immigrant assimilation (Abramitzky, Boustan, & Connor, 2020; Abramitzky, Boustan, & Eriksson, 2020; Stecklov & Goldstein, 2016), mortality (Cook et al., 2016) and the use of last names to study social mobility (Clark et al., 2015; Connor, 2020). As demographers have yet to widely leverage the insight revealed in child naming, this will continue to be a verdant area for future research.

References

Abramitzky, R., Boustan, L., & Eriksson, K. (2020). Do Immigrants Assimilate More Slowly today than in the past? *American Economic Review: Insights*, *2*(1), 125–41.

Abramitzky, R., Boustan, L. P., & Connor, D. (2020). *Leaving the Enclave: Historical Evidence on Immigrant Mobility from the Industrial Removal Office*. National Bureau of Economic Research.

Arensberg, C. M., & Kimball, S. T. (1940). *Family and community in Ireland*. Harvard University Press.

Balland, P.-A., & Rigby, D. (2017). The geography of complex knowledge. *Economic Geography*, *93*(1), 1–23.

Beach, B., & Hanlon, W. W. (2019). *Censorship, family planning, and the historical fertility transition*. National Bureau of Economic Research.

Becker, G. S., Murphy, K. M., & Tamura, R. (1990). Human capital, fertility, and economic growth. *Journal of Political Economy*, *98*(5, Part 2), S12–S37.

Bongaarts, J., & Watkins, S. C. (1996). Social interactions and contemporary fertility transitions. *Population and Development Review*, 639–682.

Byrne, A., & O'Sullivan, E. (2019). Arensberg, Kimball and de Valera: A story of sex and censorship. *Irish Journal of Sociology*, *27*(3), 227–250.

Carlsson, G. (1966). The decline of fertility: Innovation or adjustment process. *Population Studies*, *20*(2), 149–174.

Clark, G., Cummins, N., Hao, Y., & Vidal, D. D. (2015). Surnames: A new source for the history of social mobility. *Explorations in Economic History*, *55*, 3–24.

Cleland, J., & Wilson, C. (1987). Demand theories of the fertility transition: An iconoclastic view. *Population Studies*, *41*(1), 5–30.

Coale, A. J. (1986). The decline of fertility in Europe since the eighteenth century as a chapter in demographic history. *The Decline of Fertility in Europe*, *1*.

Compton, P. A. (1976). Religious affiliation and demographic variability in Northern Ireland. *Transactions of the Institute of British Geographers*, 433–452.

Connor, D. S. (2017). Poverty, Religious Differences and Child Mortality in the Early 20th Century: The Case of Dublin. *Annals of the American Association of Geographers*.

Connor, D. S. (2019). The Cream of the Crop? Geography, networks and Irish migrant selection in the Age of Mass Migration. *The Journal of Economic History*, *79*(1). Available at: https://escholarship.org/uc/item/9h1331j3

Connor, D. S. (2020). Class Background, Reception Context, and Intergenerational Mobility: A Record Linkage and Surname Analysis of the Children of Irish Immigrants. *International Migration Review*, *54*(1), 4–34.

Connor, D. S., Mills, G., & Moore-Cherry, N. (2011). The 1911 Census and Dublin city: A spatial analysis. *Irish Geography*, *44*(2–3), 245–263.

Cook, L. D., Logan, T. D., & Parman, J. M. (2016). The mortality consequences of distinctively black names. *Explorations in Economic History*, *59*, 114–125.

Day, L. H. (1968). Natality and ethnocentrism: Some relationships suggested by an analysis of catholic—protestant differentials. *Population Studies*, *22*(1), 27–50.

Dixon, R. B. (1978). Late marriage and non-marriage as demographic responses: Are they similar? *Population Studies*, *32*(3), 449–466.

Dribe, M., Breschi, M., Gagnon, A., Gauvreau, D., Hanson, H. A., Maloney, T. N., Mazzoni, S., Molitoris, J., Pozzi, L., & Smith, K. R. (2017). Socio-economic status and fertility decline: Insights from historical transitions in Europe and North America. *Population Studies*, *71*(1), 3–21.

Dribe, M., & Scalone, F. (2014). Social class and net fertility before, during, and after the demographic transition: A micro-level analysis of Sweden 1880–1970. *Demographic Research*, *30*, 429–464.

Easterlin, R. A., & Crimmins, E. M. (1985). *The fertility revolution: A supply-demand analysis*. University of Chicago Press.

Fernandez, R., & Fogli, A. (2009). Culture: An empirical investigation of beliefs, work, and fertility. *American Economic Journal: Macroeconomics*, *1*(1), 146–77.

Fernihough, A. (2017). Human capital and the quantity–quality trade-off during the demographic transition. *Journal of Economic Growth*, *22*(1), 35–65.

Fernihough, A., Ó Gráda, C., & Walsh, B. M. (2015). Intermarriage in a Divided Society: Ireland a Century Ago. *Explorations in Economic History*, *56*, 1–14.

Fryer, R. G., & Levitt, S. D. (2004). The causes and consequences of distinctively black names. *The Quarterly Journal of Economics*, *119*(3), 767–805.

Goldscheider, C., & Mosher, W. D. (1991). Patterns of contraceptive use in the United States: The importance of religious factors. *Studies in Family Planning*, *22*(2), 102–115.

Goldstein, J., & Klüsener, S. (2014). Spatial analysis of the causes of fertility decline in Prussia. *Population and Development Review*, *40*(3), 497–525.

Goldstein, J., & Stecklov, G. (2021). Naming the precious child: Evidence for intentional family planning in historical populations. *Unpublished*.

Guinnane, T. (1997). *The vanishing Irish: Households, migration, and the rural economy in Ireland, 1850-1914*. Princeton University Press.

Guinnane, T. (2011). The historical fertility transition: A guide for economists. *Journal of Economic Literature*, *49*(3), 589–614.

Guinnane, T., Moehling, C., & Ó Gráda, C. (2006). The fertility of the Irish in the United States in 1910. *Explorations in Economic History*, *43*(3), 465–485.

Guinnane, T., Moehling, C., & O'Grada, C. (2001). Fertility in south Dublin a century ago: A first look. *Economic Growth Center Discussion Paper*, *838*.

Haan, M. D. (2005). Studying the impact of religion on fertility in nineteenth-century Canada: The use of direct measures and proxy variables. *Social Science History*, 373–411.

Hacker, J. D. (1999). Child naming, religion, and the decline of marital fertility in nineteenth-century America. *The History of the Family*, *4*(3), 339–365.

Hacker, J. D. (2020). Reconstruction of birth histories using children ever born and children surviving data from the 1900 and 1910 US censuses. *Historical Methods: A Journal of Quantitative and Interdisciplinary History*, *53*(1), 28–52.

Hacker, J. D., & Roberts, E. (2017). The impact of kin availability, parental religiosity, and nativity on fertility differentials in the late 19th-century United States. *Demographic Research*, *37*(34), 1049.

Hayford, S. R., & Morgan, S. P. (2008). Religiosity and fertility in the United States: The role of fertility intentions. *Social Forces*, *86*(3), 1163–1188.

Henderson, S. S. J. (2017). *Historical Reflections on Religion, Finance and Economic Development* [PhD Thesis]. Queen's University Belfast.

Jaadla, H., Reid, A., Garrett, E., Schürer, K., & Day, J. (2020). Revisiting the fertility transition in England and Wales: The role of social class and migration. *Demography*, 1–27.

Kennedy, R. E. (1973). Minority group status and fertility: The Irish. *American Sociological Review*, 85–96.

Klüsener, S., Dribe, M., & Scalone, F. (2019). Spatial and social distance at the onset of the fertility transition: Sweden, 1880–1900. *Demography*, *56*(1), 169–199.

Lehrer, E. L. (1996). Religion as a determinant of marital fertility. *Journal of Population Economics*, *9*(2), 173–196.

Lesthaeghe, R. (1983). A century of demographic and cultural change in Western Europe: An exploration of underlying dimensions. *Population and Development Review*, 411–435.

Lesthaeghe, R., & Surkyn, J. (1988). Cultural dynamics and economic theories of fertility change. *Population and Development Review*, 1–45.

Lieberson, S., & Bell, E. O. (1992). Children's first names: An empirical study of social taste. *American Journal of Sociology*, *98*(3), 511–554.

McQuillan, K. (2004). When does religion influence fertility? *Population and Development Review*, *30*(1), 25–56.

Ó Gráda, C. (1991). New evidence on the fertility transition in Ireland 1880–1911. *Demography*, *28*(4), 535–548. https://doi.org/10.2307/2061421

Ó Gráda, C. (2006). *Jewish Ireland in the age of Joyce: A socioeconomic history*. Princeton University Press.

Ó Gráda, C., & Duffy, N. (1995). Fertility control early in marriage in Ireland a century ago. *Journal of Population Economics*, *8*(4), 423–431.

Ó Gráda, C., & Walsh, B. (1995). Fertility and population in Ireland, North and South. *Population Studies*, *49*(2), 259–279.

Okun, B. S. (2017). Religiosity and fertility: Jews in Israel. *European Journal of Population*, *33*(4), 475–507.

Reid, A., Garrett, E., & Szreter, S. (2016). Residential mobility and child mortality in early twentieth century Belfast. In D. Ramiro Fariñas & M. Oris (Eds.), *New approaches to Death in Cities during the Health Transition* (Vol. 12). Springer.

Reid, A., Jaadla, H., Garrett, E., & Schürer, K. (2020). Adapting the Own Children Method to allow comparison of fertility between populations with different marriage regimes. *Population Studies*, *74*(2), 197–218.

Ruggles, S., Flood, S., Goeken, R., Grover, J., Meyer, E., Pacas, J., & Sobek, M. (2020). *PUMS USA: Version 10.0 [dataset]*. https://doi.org/10.18128/D010.V10.0

Spolaore, E., & Wacziarg, R. (2019). *Fertility and modernity*. National Bureau of Economic Research.

Stecklov, G., & Goldstein, J. (2016). From Patrick to John F. Ethnic Names and Occupational Success in the Last Era of Mass Migration. *American Sociological Review*, *81*(1), 85–106.

Storper, M., & Venables, A. J. (2004). Buzz: Face-to-face contact and the urban economy. *Journal of Economic Geography*, *4*(4), 351–370.

Szreter, S. (1996). *Fertility, class and gender in Britain, 1860-1940*. Cambridge University Press.

van Leeuwen, M., & Maas, I. (2011). *Hisclass: A Historical International Social Class Scheme*. Universitaire Pers Leuven.

van Leeuwen, M., Maas, I., & Miles, A. (2002). *HISCO: Historical international standard classification of occupations*. Leuven: Leuven University Press. http://library.wur.nl/WebQuery/clc/1656817

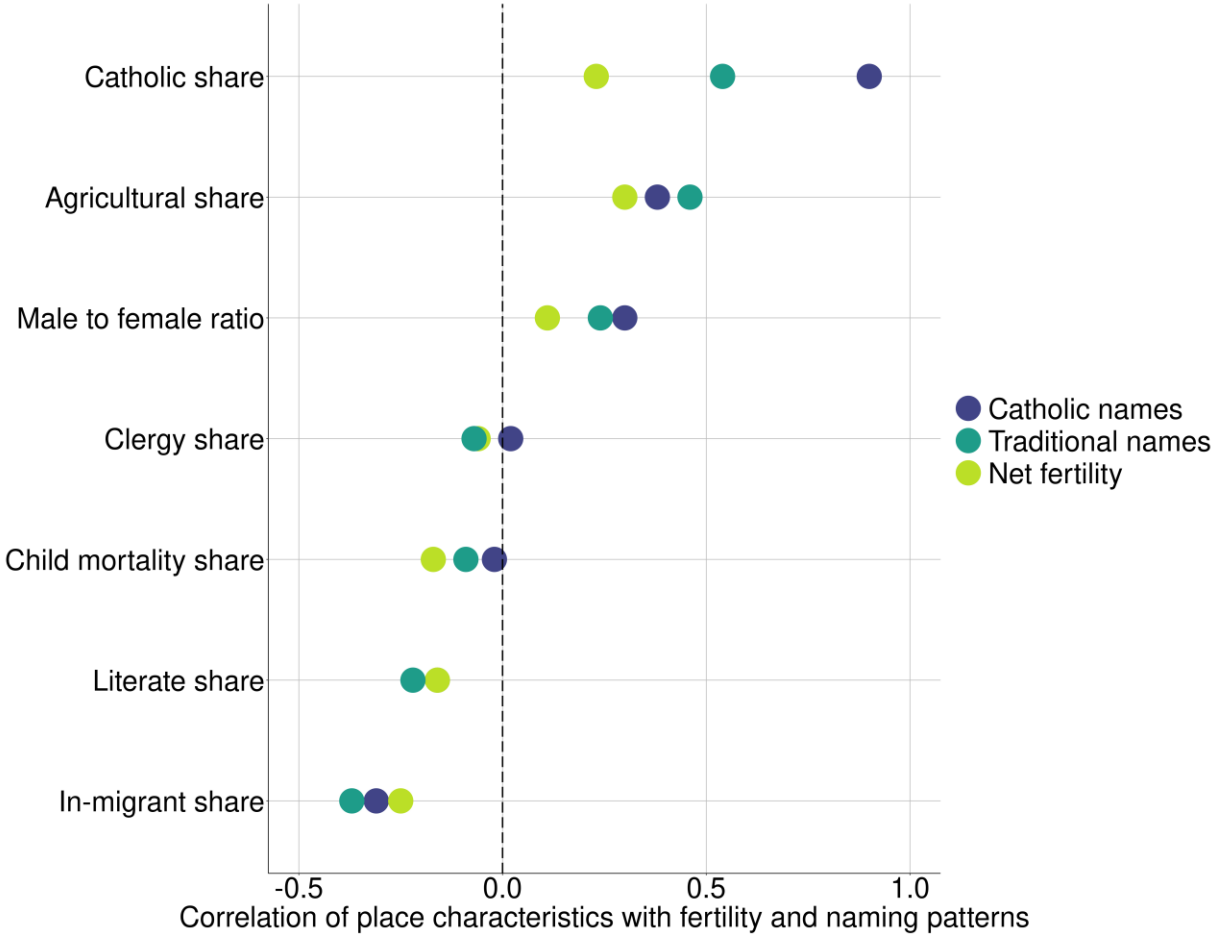
Vogl, T. S., & Freese, J. (2020). Differential fertility makes society more conservative on family values. *Proceedings of the National Academy of Sciences*, *117*(14), 7696–7701.

Yeatman, S. E., & Trinitapoli, J. (2008). Beyond denomination: The relationship between religion and family planning in rural Malawi. *Demographic Research*, *19*(55), 1851.

Zelinsky, W. (1970). Cultural variation in personal name patterns in the Eastern United States. *Annals of the Association of American Geographers*, *60*(4), 743–769.

Appendix

Appendix Figure 1. Place-level correlations between naming and fertility outcomes in Ireland, circa 1911



Appendix Table 1. Regression estimating the impact of religious indicators on net fertility by marital duration with alternate control variables and sample restrictions

		Y = Net fertility	
		(1)	(2)
A. Name measures for first child only	Catholic Index, children (log)	0.0291***	0.0188***
		(0.005)	(0.005)
	Traditional Name Score, children (log)		0.00611***
			(0.002)
	N	129779	129779
B. Poisson estimation	Catholic Index, children (log)	0.0897***	0.0313***
		(0.003)	(0.004)
	Traditional Name Score, children (log)		0.0438***
			(0.001)
	N	130563	130563
C. Sample restricted to recently married (<5 years)	Catholic Index, children (log)	0.0564***	0.0111*
		(0.005)	(0.005)
	Traditional Name Score, children (log)		0.0315***
			(0.001)
	N	34375	34375
D. Catholic Index replace with share of children with biblical name	Share of children with biblical name	-0.121***	-0.450***
		(0.010)	(0.012)
	Traditional Name Score, children (log)		0.143***
			(0.002)
	N	130596	130596
	Sample	Couples	Couples
	Controls		
	Marital duration	Y	Y
	Age at marriage	Y	Y
	Catholic Index, couple	Y	Y
	Religion & mixed marriage	Y	Y
	County of birth	Y	Y
	Husband's occ.	Y	Y
	Literacy	Y	Y
	Migrant	Y	Y
	DED FE	Y	Y
	Patronym or Matronym, first children	Y	Y

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, Robust standard errors in parentheses

Notes: OLS regression estimates of the association between religious indicators and net fertility by marital duration. The sample is restricted to mothers married less than 15 years, with spouse present, aged 16-49 and married between ages 16-40. These models differ to Table 3 in: measuring naming from the first-born children (Row A); using a Poisson instead of an OLS model (Row B); restricted to recently married couples (Row C); replacing the Catholic Index with the share of children with biblical names (Row D). These estimates are based on a modified version of the model described in Equation 3.