Borders of Belief: Protestantism and Social Mobility*

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Abstract:

Max Weber linked Protestant prosperity to a distinctive work ethic and thrift. More recent research emphasizes instead the role of human-capital formation. We contribute to this debate by showing that Protestantism also causally promoted social mobility. We study the Netherlands during the late-nineteenth century and early-twentieth century and instrument municipal Protestant share with sixteenth-century archdiocesan boundaries that shaped Catholic enforcement in the Counter-Reformation. Municipalities with higher instrumented Protestant presence subsequently exhibited greater intergenerational mobility, higher fiscal capacity and material living standards. Using newly linked micro-data on fatherson occupational pairs, we directly measure mobility and evaluate competing channels within a unified empirical framework. Social mobility consistently outperforms the more canonical channels of human capital or savings. The results provide further evidence for Protestantisms legacy to the cultural and institutional foundations of modern growth.

JEL Classifications: N14, D72, H71

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1 Introduction

Did Protestantism offer lasting economic advantages and, if so, through which mechanisms? Existing explanations emphasize either a Protestant ethic of disciplined saving, which fostered capital accumulation (Weber, 2004; Delacroix and Nielsen, 2001), or the confessional schooling systems that promoted literacy and secular human capital (Becker and Woessmann, 2009). Both accounts share a common premise: Protestantism raised economic performance by changing what individuals *had*, whether savings or skills. This paper advances a complementary but distinct argument. What mattered was not the accumulation of such endowments per se, but the degree to which individuals could act upon them. We show that Protestantism causally promoted intergenerational occupational mobility, weakening the role of inherited status in determining economic position and enabling a more efficient allocation of talent across the economy.[1] In a context where basic literacy was already near-universal, this allocation channel proves more powerful than additional skill accumulation in accounting for long-run differences in local prosperity. [2]

Testing this hypothesis has been difficult for two simple reasons. First, religious adoption was not random: did Protestantism cause economic dynamism, or did economically dynamic regions simply adopt Protestantism more readily? Second, measuring social mobility historically requires linking individuals across generations, a data challenge rarely overcome at scale before the twentieth century. As a consequence, existing studies have emphasized the broader social consequences of Protestantism in reshaping social exchange, but they do not directly measure social mobility or establish causal evidence at scale (Nunziata and Rocco, 2016; Cantoni, 2015; Arruñada, 2010).

We address the identification challenge by exploiting the historical division of the Low Countries in the mid-sixteenth century as a quasi-natural experiment. The Papal bull *Super Universas* of 1559 reorganized the region into two archdioceses: Utrecht in the north and Mechelen in the south (Dierickx, 1950). Counter-Reformation enforcement subsequently diverged sharply: in Mechelen, the Church and Habsburg state collaborated closely to suppress Protestantism and embed Catholicism in everyday civic life, while in Utrecht, ineffective leadership and aggressive repression fueled the Dutch Revolt, and Calvinism emerged as the dominant religious force following the Protestant capture of the city in 1580. The consequence was a persistent and geographically sharp religious divide, with municipalities north of the 1559 line becoming predominantly Protestant and those to the south remaining mainly Catholic. Crucially, this boundary predates the Reformation itself, and historical evidence confirms that near the border, confessional alignment was shaped primarily by local contingencies rather than by deeper economic or institutional differences

[1] We use the terms intergenerational occupational mobility and social mobility interchangeably throughout the paper.

[2] Municipal literacy rates averaged 95.1 percent across Dutch municipalities as early as 1890, with regional variation of only three percentage points between the least and most literate provinces. These figures are drawn from the Provincial Records (*Provinciale Verslagen*).

(Ten Boom, 1970; Verseput, 1965): the final religious character of a community often turned on the presence of a sympathetic priest, the activism of a local schoolmaster, or the accident of road access rather than on any systematic difference in underlying conditions.

We exploit this divide by implementing an instrumental variable design that compares municipalities in close proximity to the historical boundary, instrumenting late-nineteenth-century Protestant shares with archdiocesan affiliation. Our identifying variation derives from the differential success of Counter-Reformation enforcement on either side of an administrative line drawn for ecclesiastical rather than economic reasons, and we confirm the orthogonality of this boundary by showing no discontinuities in geographic characteristics, pre-Reformation development variables, or institutional fundamentals at the cutoff.[3] We believe the same identification strategy may prove useful for studying other ecclesiastical boundaries throughout Europe.[4]

To measure social mobility we construct an original micro-level database covering over 250,000 linked father–son occupational pairs across more than 500 Dutch municipalities, drawn from civil marriage records between the 1830s and 1910. We harmonize occupations using internationally comparable HISCLASS and HISCAM schemes (Van Leeuwen et al., 2002), which classify occupations along dimensions of skill, authority, and social interaction, allowing us to capture both discrete movements across occupational classes and continuous changes in social standing within a unified measurement framework. We focus on the Netherlands during its period of rapid industrialization, a phase of structural change that provides a highly informative setting for studying how religious norms shape long-run economic outcomes.[5] By combining these data with self-collected indicators of municipal fiscal capacity, human capital formation, and financial development, we can assess mobility both as an outcome and as a mechanism linking religion to economic development.

The Netherlands offers several advantages as a case study. First, the country exhibited pronounced religious diversity and significant regional variation in religious composition, while its relatively small municipalities allow for a more granular analysis than compa-

[3] A related concern is that the archdiocese boundary may partly capture differential exposure to Habsburg institutional influence, given the close alliance between the Church and Habsburg state in the Mechelen archdiocese. We address this by showing in Appendix C that the 1559 boundary predicts late-nineteenth-century religious affiliation more accurately than alternative historical borders, including the border between the Dutch Republic and the Habsburg Netherlands (1588–1795), the Roman frontier (ca. 110 AD), and the 1437 divisions among Brabant, Zeeland, and the Gist of Utrecht. The archdiocesan border is also distinct from the later political border of the Dutch Republic, allowing us to disentangle the effects of Protestantism from the institutional legacy of the so-called *Generality Lands*.

[4] While previous studies have used distance to Wittenberg (Becker and Woessmann, 2009; Schaff, 2024) to instrument for Protestantism in German contexts, this instrument is geographically implausible for the Netherlands, where it would predict greater Protestant adoption in the southern Low Countries than in the north, contrary to the historical record.

[5] Periods of major transformation are especially revealing because norms that remain inert during stagnation can become decisive "switchmen" (to use Weber's term), influencing how societies respond to new economic opportunities and altering patterns of upward mobility (Mokyr, 2005; Mokyr et al., 2008; Lowes et al., 2025).

rable localities in the Holy Roman Empire (Van Zanden and Van Riel, 2004).[6] Second, the Netherlands was ethnically and linguistically homogeneous, reducing the risk that ethno-national divisions, such as those between Poles and Germans, confound the relationship between religion and economic performance (Kersting et al., 2020; Hornung, 2019). Third, Calvinism, a very pronounced form of Protestantism identified by Weber as particularly conducive to "restless striving for worldly success" due to its emphasis on predestination, was the dominant Protestant confession in the Netherlands, whereas Lutheranism prevailed across much of the Holy Roman Empire. At the same time, the Netherlands presents a particular challenge for human capital interpretations of the Reformation: literacy was already widespread and regionally homogeneous well before the nineteenth century, with the Dutch Republic having achieved high rates of schooling participation from at least the seventeenth century onward (De Vries and Van der Woude, 1997; Akçomak et al., 2016). In such a setting, the margin on which religion could plausibly still operate was not the accumulation of basic skills, but rather the social and institutional barriers governing access to occupations, making the Netherlands an especially informative laboratory for isolating the allocation channel.

Our results indicate that Protestantism significantly increased social mobility, both at the municipal level and at the level of individual father–son pairs. Protestant sons were substantially more likely to move across occupational classes relative to their fathers than their Catholic counterparts, an effect driven primarily by upward rather than downward occupational movement. Municipalities with greater Protestant presence subsequently exhibited higher income tax revenues, greater wealth accumulation, and higher rates of consumer capital ownership. When we jointly consider all three potential mechanisms, social mobility emerges as the most robust and consistent predictor of prosperity across specifications and outcome measures.[7] The savings channel finds no empirical support: Protestant municipalities did not exhibit systematically higher rates of financial development or savings accumulation. Human capital effects are present but weaker and less stable across specifications. We interpret this pattern not as a failure to replicate Becker and Woessmann (2009), but as evidence that the relative importance of the allocation and accumulation channels depends on baseline literacy: where schooling was already near-universal, it was the fluidity of occupational structures, rather than their educational foundations, that differentiated prosperous from stagnant communities.

Our study contributes to various strands of literature. Most notably, we complement a literature focusing on how religion transforms social structures and may reshape patterns of cooperation, trust, and institutional development (Arruñada, 2010; Nunziata and

[6] In the Netherlands, there were 1,121 municipalities in 1910, the year for which we collected most of our independent variables. Around the same time, there were 452 counties in Prussia (Becker and Woessmann, 2009).

[7] The mechanism comparison should be interpreted as descriptive evidence on the relative predictive power of each channel conditional on the others, rather than as a fully independent causal estimate of mobility on development. We discuss the assumptions required for a causal interpretation and the limitations of this approach in Section 5.

Rocco, 2016; Greif, 2006; Becker and Woessmann, 2018; Schulz, 2022; Chen et al., 2022; Schaff, 2024). By testing three competing mechanisms in a unified empirical framework with direct measurement of intergenerational mobility at scale, we provide causal evidence that social mobility was a primary driver of Protestant economic advantage, a mechanism that prior work invoking social structures and impersonal exchange could not establish directly. We complement Becker and Woessmann (2009) while qualifying the scope of their argument: human capital formation was a genuine channel of the Reformation's economic impact, but its importance appears to vary with the baseline level of literacy, and in contexts where that baseline was already high, the allocation channel we identify likely dominated. We also contribute to the Weber debate more narrowly by providing direct evidence against the savings and thrift interpretation, consistent with recent revisionist accounts from the Prussian context (Kersting et al., 2020). More broadly, our findings speak to a growing literature on how historical institutions and norms shaped long-run regional development (Krugman, 1991; Crafts, 1995; Acemoglu et al., 2012; Mokyr, 2005), and suggest that the flexibility of social structures may be as consequential for growth as the accumulation of productive factors themselves.

Although our empirical strategy credibly identifies the effect of Protestantism on both intergenerational mobility and local development, several considerations circumscribe the scope of interpretation. Our estimates apply to municipalities whose religious composition was shaped by proximity to the 1559 archdiocese boundary, and extrapolation beyond this border region requires the assumption that the mechanisms we identify operated similarly elsewhere. Our mechanism tests show that social mobility consistently outperforms competing channels, but the comparison is conditional rather than fully causal and is best interpreted as evidence on relative predictive power rather than a causal decomposition. Our granular mobility analysis covers roughly half the municipalities in the main analysis owing to variation in the digital preservation of marriage records.[8]

Our paper is organized as follows. In Section 2, we outline our theoretical motivation. Section 3 provides a brief historical background on religion in the Netherlands and presents supporting evidence for our identification strategy. In Section 4, we describe the data sources and our empirical approach. In Section 5, we analyze the religious differential in economic development and explore possible mechanisms underlying our main findings. Section 6 concludes.

2 Theoretical Motivation

Unlike much of the existing literature, which emphasizes thrift or human-capital accumulation through literacy, we argue that in the nineteenth-century Netherlands, social mobility was the primary channel through which the Reformation shaped long-run economic development. The "common interpretation" of Weber's hypothesis holds that Protestant

[8]The robustness check in Table E.8 confirm this does not drive the results.

anxiety over predestination fostered disciplined labor, modest living, and saving, which in turn encouraged capital accumulation and growth (Delacroix and Nielsen, 2001).[9] Becker and Woessmann (2009) advanced a human-capital channel, arguing that Protestantism promoted literacy through Bible reading, which spilled over into secular skills and higher productivity.[10] Our argument is complementary to both accounts but emphasizes a distinct mechanism: Protestantism altered the costs and benefits of occupational mobility, producing both a higher level of occupational status and lower intergenerational persistence of that status in Protestant communities.

We identify two channels through which Protestantism shaped these outcomes. The first is a *societal channel*, following Glaeser and Glendon (1998) and Arruñada (2010). By emphasizing direct accountability before God and rejecting clerical and patronage-based intermediation, Protestantism encouraged adherence to universal rules, impersonal trust, and contract enforcement. These norms reduced reliance on kinship networks and lowered the transaction costs of impersonal exchange, making advancement less dependent on inherited ties and more responsive to individual merit. Crucially, collective Protestant religiosity generated a social-capital externality that raised the expected return to skilled, mobile occupations over traditional ones. The second is a *personal channel*, following Nunziata and Rocco (2016) and Doepke and Zilibotti (2008). Protestant theology cultivated autonomy, perseverance, and an internal locus of control—traits that underpin initiative and occupational ambition. These values were also actively transmitted across generations at lower cost: Protestant doctrine provided a ready cultural template for instilling occupationally mobile dispositions in children, reducing the barriers to intergenerational transmission of ambition.

We formalize both channels in a two-generation dynastic model in the spirit of Becker and Tomes (1986) and Doepke and Zilibotti (2008) (Appendix D). Each dynasty chooses an occupation—traditional or mobile—and invests in transmitting a disposition for mobility to the next generation. Two religion-specific parameters discipline the model: (i) Protestant communities sustain higher equilibrium religiosity, which raises the expected return to mobile occupations and lowers the disposition threshold required to enter them; and (ii) Protestant parents face a lower cost of transmitting a mobile disposition, inducing higher investment across generations. These two parameters jointly yield three propositions:

> **Proposition 1.** *The fraction of agents choosing mobile occupations is strictly higher in Protestant communities.*

[9] This interpretation simplifies Weber's complex and sometimes ambiguous arguments into a testable claim: that Protestant beliefs instilled diligence, frugality, and thrift, thereby contributing to capital accumulation and economic development (Kersting et al., 2020).

[10] While the analysis by Becker and Woessmann (2009) relies on literacy data from Prussia in 1871, subsequent work has extended the evidence base to other settings; see, e.g., Boppart et al. (2013) and Dittmar and Meisenzahl (2016).

Proposition 2. *Expected wages conditional on mobile-occupation entry are strictly higher in Protestant communities.*

Proposition 3. *Upward occupational mobility is strictly higher in Protestant communities:*

$$\Pr(s_{t+1} = 1 \mid s_t = 0,\, D = P) \;>\; \Pr(s_{t+1} = 1 \mid s_t = 0,\, D = C).$$

Propositions 1 and 2 follow primarily from the social-capital externality: higher communal religiosity simultaneously lowers the occupational threshold and raises mobile-sector wages. Proposition 3, which is central to our empirical analysis, combines both channels. The religiosity externality lowers the bar that children must clear to enter a mobile occupation, while higher transmission investment shifts the distribution of children's dispositions rightward, making the bar more likely to be cleared. The two forces are mutually reinforcing: a higher expected return to the mobile occupation raises the value of transmitting a mobile disposition, which—given lower transmission costs—further widens the investment gap between Protestant and Catholic households. A corollary is that the Protestant mobility premium is largest among dynasties originating furthest below the threshold, a prediction that maps directly onto our empirical finding that the advantage is concentrated among sons with low-status fathers.

Together, the model predicts both a *level effect*—higher average occupational status in Protestant municipalities—and a *mobility effect*—lower intergenerational persistence of occupational rank. Social mobility thus enters our analysis in two related roles: as the proximate consequence of Protestant norms, and as the mechanism through which those norms generated lasting differences in local economic development. The subsequent sections assess both in turn.

3 Historical Setting

3.1 Archdiocese as the Determinant of Religion

The Reformation in the Netherlands began in the early sixteenth century as part of the broader European Protestant Reformation, initially influenced by Lutheran ideas but increasingly shaped by Calvinism, which found strong support among the urban middle classes and some segments of the nobility (Kooi, 2022). Even before the Reformation gained momentum, the region had shown receptiveness to Protestant ideas, as reflected in the work of figures like Desiderius Erasmus. His satirical writings, notably *The Praise of Folly*, criticized corruption, hypocrisy, and abuses within the Catholic Church, fostering an intellectual climate that later reformers would build upon. This erosion of the Church's moral and institutional authority created favorable conditions for Protestant doctrines to

spread.[11]

The hierarchical structure of the Catholic Church made it difficult to address corruption and abuse effectively, even as the spread of Protestantism underscored the urgency of reform. Early efforts to reorganize the Church in the Low Countries between 1525 and 1530 failed. Only in 1559, following the fall from favor of Cardinal Carlo Carafa who was a key opponent of reform, did progress become possible. That same year, the papal bull *Super Universas* established two new archdioceses, Utrecht in the north and Mechelen in the south, as part of a broader ecclesiastical reordering. Each bishopric was paired with a wealthy convent to finance the restructuring (Rogier, 1947).

From this point, the archdioceses followed sharply divergent paths. In Utrecht, delays in appointments and the ineffectiveness of Archbishop Schenk van Toutenburg (1503–1580), who faced resistance from local elites and clergy, undermined efforts at Catholic renewal. Meanwhile, aggressive repression of dissent sparked widespread unrest, contributing to the outbreak of the Dutch Revolt (1568–1648) (Israel, 1995; Noordzij, 2012). As the Revolt progressed, Calvinism gained increasing influence, particularly in urban centers. Its strong organizational structure, emphasis on local governance, and appeal to the burgeoning merchant class allowed it to embed deeply within civic institutions. The Synod of Emden in 1571 helped formalize Calvinist church governance, while the Union of Utrecht in 1579 aligned the northern provinces politically and religiously against Spanish rule. Following the Protestant capture of Utrecht in 1580 and the death of Schenk van Toutenburg, centralized Catholic efforts collapsed in the north, and Calvinism emerged as the dominant religious force. The Peace of Westphalia in 1648 then formalized Dutch independence and entrenched the Protestant character of the northern Netherlands.

In contrast, the Archdiocese of Mechelen became a stronghold of the Catholic Counter-Reformation. Its first archbishop, Cardinal Granvelle, was an assertive and effective leader who promoted reform with strong support from the Habsburg monarchy. The Church and state collaborated closely to rebuild ecclesiastical structures, enforce Tridentine decrees, and empower new and revitalized religious orders such as the Jesuits, Capuchins, Franciscans, and Dominicans. In addition to suppressing Protestantism, the Church deepened Catholic engagement through popular devotions, Marian shrines, confraternities, processions, and the reinforcement of sacramental life, all of which helped embed Catholicism firmly in everyday society (Kooi, 2022). The close alliance between the Church and Habsburg state in Mechelen raises the question of whether the archdiocesan boundary captures differential institutional exposure rather than religious composition alone. We address this concern empirically by showing that the boundary predicts late-nineteenth-century religious affiliation more accurately than the border between the Dutch Republic and the

[11]This critical climate is also evident in cases such as a 1496 incident in Goedereede, where Catholic practices were publicly condemned and priests accused of vanity and deceit" (hoovaerdy ende boevery van de paperi") (Visser, 2018). Visitations in 1571 further exposed widespread clerical misconduct, including concubinage and drunkenness, with one report stating that the conditions were indescribably corrupt" (de toestanden boven alle beschrijving bedorven waren") (Visser, 2018).

Habsburg Netherlands, and that no discontinuities in institutional or geographic fundamentals are detectable at the cutoff; see Appendix C for details. In line with the dominant confessional influences on either side, places south of the line tended to remain Catholic, while those to the north became Protestant. An illustration of this is provided in Figure A.1.[12]

[Figure A.1 here]

Following the international recognition of the Dutch Republic, the religious landscape stabilized for some time. It was not until the mid-nineteenth century that the Netherlands underwent a new wave of religious transformation. The 1848 Constitution, which enshrined religious freedom, enabled the resurgence of Catholicism, especially in the southern provinces (Kaplan, 2010). While Catholics in the north remained a minority, they began organizing socially and politically, and liberal and new Protestant movements also gained ground during this period (Frijhoff, 2002; Israel, 1995). This pluralism eventually gave rise to "pillarization," a system of separate institutions for each religious or ideological group that helped manage religious diversity and reduce overt conflict (Frijhoff, 2002). While pillarization introduced a degree of institutional separation between religious communities, it postdates the religious sorting induced by the 1559 boundary and is better understood as a consequence of the confessional divide than as an independent determinant of economic outcomes. It does not therefore confound the identification of Protestant effects on mobility and development that is the focus of this study.

3.2 Affiliation near the border

While the broad confessional divide between the two archdioceses reflected systematic differences in Counter-Reformation enforcement, the precise religious character of individual communities near the boundary was shaped by more contingent factors. Historical studies consistently show that in this border region, religious affiliation was determined less by deeper socioeconomic conditions than by local contingencies of leadership, clerical availability, and institutional presence.

For instance, Ten Boom (1970) documents how Jacob Mom, the Catholic official active in municipalities just south of the archdiocesan line, actively resisted Protestant reforms by shielding priests and obstructing the seizure of church property. His efforts were bolstered by Catholic nobles who hosted clandestine masses. The region's proximity to Catholic Brabant enabled priests to cross the river covertly, ensuring continuous pastoral care and reinforcing Catholic identity. In contrast, neighboring areas became Protestant often due to a shortage of clergy, not theological preference. Verseput (1965) presents a similar

[12]Figure A.1 indicates that Protestant shares rise gradually as one approaches the boundary from the Utrecht side, while they remain flat and low on the Mechelen side. At exactly distance zero, the two trends diverge abruptly, producing a discontinuity of about thirty percentage points.

picture in Bommelerwaard, a region divided by the archdiocesan border. There, religious alignment fluctuated with political shifts, while local figures played decisive roles. In towns like Driel, missionary support and lay activism preserved Catholicism. Incidents such as the removal of an unpopular priest or the efforts of a Catholic schoolteacher proved pivotal. In Velddriel, continued Catholic identity was credited in part to poor road access, but more so to a schoolmaster who encouraged his neighbors to remain faithful.

Herben and Peele (2017) offers a final example in the villages of Made and Raamsdonk, where religious leaders initially blended Protestant and Catholic rites. In Raamsdonk, nominally Protestant ministers were specifically required to conduct Catholic rites, revealing the villagers' priority on continuity over confessional purity. Herben and Peele (2017) notes that villagers sought out ministers who avoided difficult questions, showing a conscious preference for Catholic flexibility and highlighting the role of weak Protestant enforcement in shaping confessional outcomes.

In sum, the evidence from communities near the border consistently points in the same direction: the final religious character of a place was determined primarily by the strength or weakness of confessional enforcement rather than by underlying economic or institutional conditions. This historical narrative is consistent with the identifying assumption that, conditional on proximity to the boundary, assignment to a Protestant or Catholic confessional environment was effectively determined by contingencies unrelated to the economic outcomes we study. Importantly, however, our identification strategy does not rest on this narrative evidence alone. In Appendix C we demonstrate orthogonality directly by showing that no pre-treatment geographic, institutional, or economic characteristics exhibit discontinuities at the 1559 boundary, providing empirical support for the exclusion restriction that is independent of the historical account.

4 Data and Empirical Strategy

4.1 Data

Our empirical strategy relies on measures of religious composition, a geographic instrument, social mobility outcomes, and a set of development outcomes, supplemented with variables that capture potential mechanisms and extensive controls. For each variable, we select as a baseline the year with the most complete and reliable coverage, while maintaining consistency across measures whenever possible. All measures are harmonised to a consistent municipal geography, with aggregation or disaggregation carried out as needed. In robustness checks, we vary baseline years and harmonisation choices to verify that results are not driven by a particular specification. We briefly describe how and why each variable was constructed; a more extensive description of all variables, together with data sources and matching procedures, is documented in Appendix B.

Our main independent variable is the Protestant share of the municipal population.

We construct this by aggregating the numerous Protestant denominations recorded in the late nineteenth century to a single category and take 1879 as the baseline reference year because earlier enumeration is incomplete. At the individual level, we construct religious affiliation for 1830–1910 from marriage records by classifying the bride, groom, and their parents as Catholic or Protestant based on the denomination recorded in the civil registry, and aggregate these classifications to municipal-level Protestant shares. These municipal shares track the corresponding census-based Protestant shares closely across five period–census combinations spanning 1830 to 1910, with adjusted R^2 values ranging from 0.68 to 0.93 and slope coefficients near unity throughout, confirming the validity of the classification.[13] For identification, we exploit the historical boundary between the Archdioceses of Mechelen and Utrecht discussed in Section 3, and compute the distance from each municipality to the border.

To measure economic development, we rely on fiscal indicators at the municipal level. Our primary outcome is income tax per capita in 1910, which offers a concise summary of local economic activity and fiscal capacity. The advantage of using income taxes is that they provide one of the most encompassing measures of prosperity available at this level of aggregation and are directly comparable to the approach in Becker and Woessmann (2009). To complement this, we also construct two wealth-based measures: per capita wealth-tax receipts in 1889 and the number of cars per capita in 1920. While income taxes reflect flows of economic activity, wealth taxes provide information about the stock of accumulated assets and the breadth of the tax base, and automobile ownership speaks to household affluence and consumer capital. Together, these measures allow us to observe both the level and distributional reach of local prosperity. Moreover, these wealth-based indicators represent a novel contribution, as comparable fiscal and capital stock data are rarely available in studies of Prussia or regions of the former Holy Roman Empire. By assembling data from 1889 and 1920, we also extend the time horizon both before and after our baseline measure, allowing for a richer perspective on long-term economic development.

We also collect data to explore the mechanisms through which religion may have affected economic development. The main focus of this study is on social mobility. To capture it, we use the occupational data present in the marriage records and compare the occupational class of grooms with that of their fathers in marriages recorded between 1830 and 1910, coding occupations to the standard HISCO taxonomy, which we then convert to HISCLASS and HISCAM.[14] We take the average absolute class difference within each municipality as our baseline mobility measure, which captures intergenerational movement in

[13] Appendix Table E.1 reports OLS regressions of the marriage-record Protestant share on the census-based Protestant share for each period.

[14] HISCLASS (Historical International Social Class Scheme) maps occupational titles into 12 hierarchical classes based on dimensions such as manual versus non-manual labor, skill level, and supervisory authority. HISCAM (Historical CAMSIS) transforms these occupations into a continuous stratification scale ranging from 1 to 99, derived from patterns of social interaction, specifically intergenerational marriage associations, where a higher score indicates higher social status. For more information see Van Leeuwen et al. (2002).

both directions rather than upward mobility alone (Van Leeuwen et al., 2002). In addition to the municipal average, we also analyse mobility at the level of individual marriages to study the personal-level correlates of Protestant affiliation.

We then investigate two competing mechanisms. One view holds that Protestantism promotes financial development. To measure this, we focus on the presence of savings banks in 1920, institutions created to help lower-middle-class workers and small business owners accumulate reserves and protect against hardship, and complement this with savings per capita in 1920. We exclude credit cooperatives in the main specification because their diffusion in the Netherlands post-dates our core period (Colvin, 2017). A second view holds that Protestantism enhances human capital. We use two measures: per-capita municipal expenditure on primary education around 1910, and an upper-tail indicator based on the density of notable individuals, defined as persons appearing in biographical dictionaries and comparable reference works, born between 1880 and 1930 and scaled by 1880 population, following the approach in Dittmar and Meisenzahl (2016). To directly assess the baseline human capital distribution that motivates our focus on the allocation channel, we also collect municipal literacy rates for 1890 from the Provincial Records (*Provinciale Verslagen*). As discussed in the introduction, these data confirm that basic literacy was already near-universal across Dutch municipalities well before the period under study, supporting the interpretation that the binding constraint on economic development had shifted from skill accumulation to the allocation of existing talent.

To account for confounding factors, we construct a broad control set. Agricultural productivity is proxied by caloric suitability using the pre-1500 crop set to avoid contamination by later land use (Galor and Özak, 2015; Gelderblom, 2016), and by crop-specific suitability for the main cereals. Geography is captured by distance to rivers and the coast, elevation, terrain ruggedness, and municipal area. Long-run urban development is captured by indicators of medieval city status and by an urban-potential index based on circa-1590 city populations and bilateral distances (Bosker et al., 2013; Curuk and Smulders, 2016). We also include the incidence of battles in the Eighty Years' War and an indicator for Catholic missions in areas where public Catholic practice was suppressed, as these capture historical shocks and targeted efforts to retain Catholic adherence.

4.2 Descriptive Statistics

Table A.1 reports summary statistics for the variables used in the analysis. Panel A presents development indicators that proxy local economic activity. Average tax revenues per capita in 1889 and 1910 are modest, although the distributions exhibit substantial dispersion. In 1910, for instance, mean income-tax revenue per capita is approximately 1.65 guilders, while values in the upper tail exceed 15 guilders. Car ownership in 1920, a direct proxy for modernization and household wealth, is low on average at 0.02 cars per capita but varies significantly, reaching up to 0.24 in the most developed municipalities. This variation in taxable capacity and asset ownership provides a clear measure of differences in economic

development across municipalities at the start of the twentieth century.

Panel B reports the Protestant share in 1879. The mean municipality is majority Protestant (57 percent), but the distribution spans the full 0 to 100 percent range. This large cross-sectional variation reflects the historically diverse religious composition across Dutch municipalities. Panel C summarizes the instrumental variables. Approximately one-third of all Dutch municipalities fall within the historical Mechelen archdiocese. The average distance to the archdiocesan boundary is -24 kilometers, where negative values indicate locations inside the archdiocese, with the full range spanning from deep within the territory (-174 km) to far outside (118 km).

Panel D reports on intermediate outcomes. Early financial development shows substantial cross-municipality heterogeneity: in 1920, the average municipality hosted fewer than 0.2 savings banks and roughly one bank of any kind.[15] Municipal savings per capita are similarly dispersed, ranging from near zero to more than 300 guilders. Educational spending in 1887 and 1910 also varies sharply across municipalities: average expenditures in 1910 are about three guilders per capita but reach several times that amount in some locations. The upper-tail human capital measure, which captures the density of notable historical figures, is generally low but highly concentrated. Municipal literacy rates in 1890 average 95 percent, with over 72 percent of municipalities exceeding 95 percent literacy, confirming the near-universal baseline that motivates our focus on occupational allocation rather than skill accumulation as the operative channel. Finally, the social mobility statistics indicate that on average 44 percent of sons remained in the same profession as their fathers, while the indices for social mobility (1.55) and social distance (3.23) reveal significant variation in intergenerational movement across municipalities.

Panel E provides geographic and historical controls. Agricultural suitability, caloric potential, and access to waterways differ across locations. Elevation and ruggedness show less variation but still meaningful range. Historical features such as medieval city status, missionary presence, and documented conflict exposure during the Eighty Years' War are present in a minority of municipalities yet vary sufficiently to be included as controls.

[Table A.1 here]

4.3 Empirical Strategy

Our empirical strategy follows a local randomization logic: within a narrow geographic band around the historical diocesan boundary, municipalities were exposed to different Counter-Reformation enforcement regimes but shared similar underlying economic and geographic characteristics. This setting is conceptually similar to a geographic regression discontinuity design. We implement it in an instrumental variables framework rather than

[15] The 1920 indicator includes all locally operating financial institutions: commercial banks, savings banks, postal savings offices, and other deposit-taking organizations.

a sharp RD, however, because religious adherence persisted strongly after the initial confessional sorting, meaning that the boundary assignment predicts but does not perfectly determine late-nineteenth-century Protestant shares.[16] The baseline model we estimate takes the following form for municipality i:

$$Y_i = \beta_0 + \beta_1 \text{ Share Protestantism } 1879_i + X_i'\beta_2 + \epsilon_i \tag{1}$$

where Y_i is an outcome variable, β_0 is a constant term, and the coefficient of interest is β_1. This reflects the impact of religion (Protestantism) while keeping the controls fixed. The vector X_i contains a host of control variables motivated in the previous section. To reflect the quasi-random assignment of the Archdiocese border, we use weights that are inversely proportional to the distance from the centroid of municipality i to the Archdiocese border.[17]. Figure A.1 shows the border and the relative intensity of the weights used.

The key threat to identification is the presence of latent factors that simultaneously drove municipalities to adopt Protestantism and influenced their subsequent economic development. We address this by instrumenting late-nineteenth-century Protestant shares with assignment to the historical Archdiocese of Utrecht versus Mechelen, exploiting the asymmetric success of Counter-Reformation enforcement after 1580 to generate a sharp and persistent religious divide. The first stage takes the following form:

$$\text{Share Protestantism } 1879_i = \gamma_0 + \gamma_1 \cdot 1_{\text{In Mechelen Archdiocese}_i} + X_i\gamma_2 + u_i. \tag{2}$$

As discussed in Section 3, historical evidence confirms that near the border, confessional alignment was shaped primarily by local contingencies of leadership, clerical presence, and enforcement capacity rather than by deep structural differences in economic fundamentals. Treatment assignment based on the historical diocesan boundary can therefore be regarded as effectively random within a narrow bandwidth, providing a credible basis for our quasi-experimental design.

We take several additional steps to establish the validity of the identification strategy. First, we address the concern that the archdiocese boundary may coincide with other historical cutoffs related to the Catholic–Protestant divide. Appendix Table E.3 evaluates several candidate borders, none of which displays a strong first stage, ruling out these alternative explanations. Second, the exclusion restriction requires that the diocesan boundary does not coincide with systematic differences in other determinants of long-run development. Appendix Table E.4 show no discontinuities in a broad range of geographic,

[16] As Casey and Klemp (2021) show, using a contemporaneous endogenous variable rather than a historical measure affects the interpretation of the IV coefficient, which must be scaled by the degree of persistence to recover a long-run effect. In Appendix Table E.2, we document that the persistence parameter δ is close to 1 in our setting, implying that our IV estimates can be interpreted as long-run causal effects.

[17] This weighting scheme effectively functions as a "soft" bandwidth: it prioritizes observations near the boundary; where the assumption of as-if random assignment is most plausible, while retaining statistical power by utilizing information from the broader sample

institutional, and historical fundamentals at the boundary.[18] Third, a related concern is that the boundary may partly capture differential exposure to Habsburg institutional influence given the close alliance between the Church and Habsburg state in the Mechelen archdiocese; we address this by showing that the 1559 boundary outperforms the Dutch Republic–Habsburg Netherlands border as a predictor of late-nineteenth-century religious composition, as documented in Appendix C.

Beyond establishing the relevance and validity of our instrument, we also address concerns regarding inference raised by Conley and Kelly (2025). In settings with strong spatial autocorrelation, both heteroskedasticity-robust and Conley (1999) standard errors tend to over-reject the null hypothesis. Conley and Kelly (2025) provide practical guidance for conducting reliable inference, which consists of nonparametrically controlling for the spatial basis using a flexible function of longitude and latitude, and subsequently adjusting standard errors for remaining spatial dependence using the method of Bester et al. (2011).[19] This adjustment requires grouping the data into a small number of large geographic clusters.

To determine the appropriate number of clusters, we follow the procedure recommended by Conley and Kelly (2025). A placebo test involving simulations with a version of the independent variable that shares the same spatial properties as the true variable but is otherwise random noise plays a central role. Specifically, we require that the standard errors not be of the heteroskedasticity-robust kind, and that the placebo rejection rate at the 5 percent level fall within the range of 5–8 percent. Where these criteria do not yield a unique candidate, we select the number of clusters that minimizes the difference between the empirical and simulated p-values, indicating that the analytical standard errors form a good approximation of the uncertainty proxied by the placebo simulations. For our IV results, we apply this procedure to the reduced form, combine the resulting reduced form and first-stage estimates, and use the delta method to obtain standard errors for the IV estimates. The resulting hypothesis tests should have a rejection rate close to the nominal level independently of the degree of spatial correlation.

5 Results

5.1 Development Effects of Protestantism

In Table A.2 we present OLS and IV estimates of the relationship between Protestantism and subsequent economic development. The first three columns report results for income tax per capita in 1910, our primary measure of local fiscal capacity; the second three columns for total taxes paid per capita in 1889, which capture the stock of accumulated

[18] Appendix Table E.5 further confirms that Protestant share does not predict pre-Reformation population levels, ruling out differential pre-trends at the boundary.

[19] We implement these guidelines using the `spatInfer` R package provided by the authors. In Appendix B.6, we explain the procedure in more detail.

wealth; and the third three columns for car ownership per capita in 1920, our most direct proxy for household affluence and modernization.

[Table A.2 here]

Panel A reports the OLS estimates. While there is a positive correlation between Protestantism and tax revenues in some specifications, the relationship is generally weak and sensitive to the inclusion of controls. For car ownership (Columns 7–9), the OLS estimates are statistically insignificant across all specifications. This suggests that in a simple correlation, the link between religion and prosperity is difficult to detect.

Panel B presents the IV estimates, which isolate the variation in Protestantism driven solely by the 1559 archdiocese border. The pattern changes markedly. We find large, positive, and statistically significant causal effects for total taxes and car ownership across all specifications. For income tax per capita, the effect is positive and significant without and with controls (Columns 1 and 2), but loses precision in the province fixed effects specification (Column 3), suggesting that within-province variation in Protestant share is less strongly correlated with income tax capacity once regional heterogeneity is absorbed. The car ownership and total tax results, by contrast, remain highly significant even in the most demanding specifications. These results are robust to our conservative inference standards: even after applying the spatial corrections proposed by Conley and Kelly (2025), the estimates retain their significance, confirming that the findings are not statistical artifacts.[20]

The discrepancy between OLS and IV suggests that simple correlations are downwardly biased by negative endogeneity, whereby historically wealthy areas were less likely to adopt Protestantism (Koenig et al., 2001; Akçomak et al., 2016). Correcting for this reveals effects that are both statistically significant and economically substantial. Turning to magnitudes, the standardized beta of 0.235 for car ownership (Column 9) implies that a one standard deviation increase in Protestant adherence is associated with nearly a quarter standard deviation increase in car ownership per capita. The corresponding coefficients for total taxes (0.139) and income tax (0.323) indicate that Protestantism generated a broad-based increase in taxable wealth and fiscal capacity across multiple dimensions of prosperity. Taken together, these estimates suggest that religious composition was a quantitatively important determinant of economic modernization in the nineteenth-century Netherlands.

5.2 Mechanisms

Having established that Protestantism had a plausible causal impact on economic development in the Netherlands, the natural next step is to investigate the mechanisms driving this effect. While the reduced-form estimates demonstrate that religion influenced prosperity,

[20] In alternative specifications employing standard errors proposed by Conley (1999) or heteroskedasticity-robust standard errors, the OLS coefficients are also highly significant across all specifications.

they do not explain how this transmission occurred. We begin by examining social mobility, the primary mechanism we propose in this study. We then test this hypothesis against the two most prominent competing explanations in the literature: financial development and human capital formation.

5.2.1 Religion and Social Mobility

In Section 2, we argued that the adoption of Protestantism could foster greater social mobility through two reinforcing channels operating at the level of social norms and individual disposition. This section tests that proposition empirically. We begin by analyzing social mobility at the municipal level, aggregating data at the groom–father pair level and using the configuration of the Archdiocese of 1559 as an instrument for the local Protestant share. The first three columns of Table A.3 report estimates for the probability that grooms and their fathers shared the same profession, while Columns (4)–(6) and (7)–(9) measure the relationship using two continuous indicators: social mobility based on HISCLASS and social distance based on HISCAM.

HISCLASS classifies occupations into twelve hierarchical classes (1 = highest, 12 = lowest) based on skill, authority, and manual versus non-manual labor. HISCAM provides a continuous score ranging from 0 to 99, where higher values correspond to higher social standing. To illustrate, consider a groom recorded as a bakery shopkeeper and his father as a farm laborer. On the HISCLASS scale, these occupations correspond to classes 7 and 12, indicating upward mobility of five steps; on HISCAM, they correspond approximately to scores of 58.8 and 49.1, a nine-point increase in social standing. We measure social mobility as the absolute difference between the father's and groom's occupational scores, such that higher values indicate greater intergenerational movement regardless of direction.

Across specifications, the estimated coefficients indicate that a higher Protestant share in 1879 is associated with greater social mobility. A one-standard-deviation increase in the Protestant share is linked to a 3 to 6 percentage point decline in the likelihood that the groom and father share the same profession, although this effect weakens and becomes statistically insignificant once province fixed effects are included. The effects on the HISCLASS mobility measure are positive and robust across all specifications. A one-standard-deviation increase in the Protestant share is associated with a 0.6 to 1.3 standard-deviation increase in social mobility, corresponding substantively to an average shift comparable to the occupational gap between an independent farmer (HISCLASS 8) and a craftsman (HISCLASS 9). The HISCAM results point in the same direction, with negative coefficients reflecting greater absolute social distance traversed across generations in Protestant municipalities, and are statistically significant in two of the three specifications.

The variation in standard errors across specifications warrants careful interpretation. Comparing Columns (4) and (5), the coefficient increases from 0.66 to 1.15 when controls are added, but the standard error triples from 0.19 to 0.61, rendering the estimate only marginally significant. This pattern reflects the spatial clustering of Protestant and Catholic

municipalities rather than genuine uncertainty about the effect: when controls are included without absorbing province-level variation, the residuals remain strongly spatially correlated, which causes the Conley correction to produce conservative standard errors. Once province fixed effects are included in Column (6), the residual spatial correlation is substantially reduced and the standard error falls back to 0.12, yielding a coefficient of 0.49 significant at the 0.1 percent level. The province fixed effects specification is therefore our preferred specification, since it both absorbs the main source of spatial clustering and provides the most reliable estimate of the Protestant mobility premium. As with the development results, the sensitivity of standard errors to the inference procedure is itself informative: it confirms that spatial autocorrelation is a first-order concern in this setting and that the Conley and Kelly (2025) correction is doing meaningful work.

The standardized effects are notably large by the standards of the economics literature. As our instrument identifies a local average treatment effect for municipalities near the archdiocese boundary, the magnitude should be interpreted with appropriate caution: the estimated premium reflects the effect of Protestantism for complier municipalities in the border region, which need not equal the average effect across all Dutch municipalities. Taken together, these results provide robust evidence that Protestantism had a quantitatively important causal impact on social mobility at the municipal level, operating through precisely the allocative mechanism emphasized in Section 2.

[Table A.3 here]

To further corroborate these municipal-level findings and address concerns about unobserved heterogeneity, we examine the relationship at the individual level, exploiting variation between Protestant and Catholic grooms observed in the same municipality and year. Specifically, we estimate the following equation for father–groom pair i in municipality j and year t:

$$\text{SocialMobility}_{ijt} = \alpha_{jt} + \beta \cdot \text{Protestant}_i + \epsilon_{ijt} \tag{3}$$

where α_{jt} denotes municipality-by-year fixed effects, so that identification comes entirely from within-municipality comparisons between Protestant and Catholic father-groom pairs. We additionally report specifications that include father HISCLASS-by-year fixed effects, ensuring that β captures differences in occupational outcomes between Protestant and Catholic sons who started from identical class backgrounds in the same place and time. We further report IV estimates instrumenting individual Protestant affiliation with assignment to the historical Archdiocese of Utrecht versus Mechelen. Because the archdiocese boundary instrument varies at the municipal level, municipality fixed effects would absorb all identifying variation in β; we therefore include province-by-year fixed effects in the IV specifications, which absorb regional heterogeneity while preserving the cross-municipal variation that drives the first stage.[21]

[21] We restrict the sample to grooms and their fathers from municipalities within 10 kilometres of the

[Table A.4 here]

Panel A presents the OLS results. Protestant affiliation is positively and significantly associated with greater social mobility across all three specifications for overall social mobility, with coefficients stable between 0.086 and 0.134 and significant at the 1 percent level throughout. This stability across specifications, from the baseline municipality-by-year fixed effects through the most demanding specification adding HISCLASS-by-year fixed effects, indicates that the Protestant mobility premium is not driven by differences in the occupational starting positions of Protestant and Catholic sons. The upward mobility results are positive and significant in two of three specifications, while the downward mobility results are positive and significant across all three. The OLS results therefore show that within Protestant communities occupational inheritance was weaker in both directions, consistent with the societal channel described in Section 2: Protestant norms of impersonal exchange and reduced reliance on kinship networks loosened the link between inherited position and occupational outcomes regardless of the direction of movement.

Panel B presents the IV results. The estimated effects are larger than the OLS counterparts, consistent with the municipal-level evidence that OLS understates the causal effect due to negative endogeneity. Protestant sons in municipality j and year t experience approximately 0.77 to 0.91 points more occupational mobility than Catholic sons with identical starting positions in the same province and year. The upward mobility effects are positive and significant across all three specifications, including the most demanding one with HISCLASS-by-year fixed effects, where the coefficient of 0.090 is significant at the 1 percent level. By contrast, the downward mobility effects are positive but statistically insignificant throughout. This asymmetry is the opposite of the OLS pattern and reflects the difference in what the two estimators identify. The OLS captures within-municipality j differences between Protestant and Catholic individuals in year t, where greater occupational fluidity in both directions is the dominant pattern. The IV by contrast identifies the aggregate causal effect of Protestant institutional and cultural exposure on occupational outcomes using cross-municipal variation driven by the archdiocese boundary. Under this identifying variation, the Protestant premium operates primarily through upward occupational advancement, which is precisely the allocative mechanism emphasized in Section 2: Protestantism relaxed the barriers that constrained individuals from low-status backgrounds, enabling them to achieve occupational positions less determined by their fathers' standing.

Taken together, the OLS and IV results tell a consistent and theoretically coherent story. The OLS establishes that Protestant communities were more occupationally fluid in both directions, reflecting weaker occupational inheritance overall. The IV refines this picture by identifying the causal effect of Protestant exposure on welfare-relevant mobility, showing that the net effect operates primarily through upward advancement rather than symmetric churn. Both findings are consistent with the allocation mechanism proposed in

archdiocese boundary, where the as-if random assignment assumption is most plausible.

Section 2 and corroborate the municipal-level evidence in Table A.3.[22] In the next section, we contrast these findings with the two alternative mechanisms most prominent in the literature to further clarify the channels linking religion and long-run economic development in the Netherlands.

5.2.2 Financial Development

Table A.5 reports IV estimates of the effect of Protestantism on three indicators of financial development: savings bank count per capita in 1920 (Columns 1–3), total bank count per capita in 1920 (Columns 4–6), and savings per capita in 1920 (Columns 7–9).

[Table A.5 here]

The results provide no empirical support for the hypothesis that Protestant economic success was driven by superior financial development. For savings banks and total bank count, the estimated coefficients are small, inconsistent in sign across specifications, and statistically insignificant in all but one case. The exception is a negative and significant association between Protestantism and savings bank count when controls are included (Column 2, -0.14^{**}), which is the opposite of what the Weber thrift hypothesis would predict.

The savings per capita results require careful interpretation. In the baseline and controls specifications (Columns 7 and 8), the coefficients are negative and statistically significant (-0.78^{***} and -0.68^{**} respectively). However, in our preferred specification with province fixed effects (Column 9), the coefficient shrinks to -0.27 and is statistically insignificant. Since we use province fixed effects as our preferred specification consistently throughout the paper, the correct reading of this table is that Protestantism had no detectable causal effect on savings per capita. The negative coefficients in Columns 7 and 8 reflect regional heterogeneity that is absorbed once province fixed effects are included, rather than a genuine local treatment effect. There is therefore no tension between the savings results and the positive development effects documented in Section 5.1: both are consistent with a null financial channel once regional confounding is properly addressed.

This interpretation is further supported by two pieces of external evidence. Kersting et al. (2020) find that in late nineteenth-century Prussia, differences in savings rates were driven by ethnic rather than religious factors, casting doubt on the generalizability of the Weber thrift argument. In the Dutch context specifically, Gelderblom et al. (2026) show that savings banks had no positive effect on local economic growth regardless of their prevalence, since regulations prevented them from investing locally and directed deposits instead toward municipal and government bonds. This institutional constraint implies

[22] The IV results are robust to controlling for net municipal migration flows 1851–1890, which addresses mechanical composition effects from selective migration into Protestant municipalities. See Table E.13 in the appendix.

that even if Protestantism had promoted thrift, the savings channel could not have translated into local productive investment in the Netherlands. The standardized β coefficients, which are small and predominantly negative across all three outcomes, confirm that financial development was not a meaningful transmission channel linking Protestantism to municipal prosperity in this setting.

5.2.3 Human Capital

Having established that Protestantism significantly increased social mobility but had no detectable causal effect on financial development, we next test whether this dynamic extended to human capital formation. A substantial literature argues that the Reformation fostered literacy and schooling, suggesting that human capital might be a primary engine of Protestant economic success. To evaluate this channel in the Dutch context, we estimate the effect of Protestantism on three proxies for human capital investment: primary education expenditures per capita in 1910 (Columns 1–3), total education expenditures per capita in 1887 (Columns 4–6), and upper-tail human capital measured by the density of notable individuals in biographical dictionaries (Columns 7–9). We additionally include municipal literacy rates in 1890 (Columns 10–12) to directly test whether the baseline human capital distribution differed across religious lines.

[Table A.6 here]

The results provide mixed evidence for the human capital hypothesis, with effects that are generally less robust than those found for social mobility. Columns (1)–(3) examine primary education expenditures per capita in 1910. We find a positive and statistically significant effect across all three specifications, including the preferred province fixed effects specification (Column 3, 1.595^{**}), suggesting that Protestant municipalities invested more in primary schooling. A similar pattern emerges for total education expenditures in 1887 (Columns 4–6), where the effect is positive and significant across all specifications, though it declines in magnitude from 0.872 to 0.547 as controls and province fixed effects are added. For upper-tail human capital (Columns 7–9), the effect is small and only marginally significant in the baseline specification but becomes large and significant once province fixed effects are included (Column 9, 0.486^{***}), consistent with the argument in Dittmar and Meisenzahl (2016) that the Reformation promoted the formation of high-level skills.

Turning to the literacy results in Columns (10)–(12), the estimated effects are positive but statistically insignificant across all three specifications. Basic literacy was already near-universal regardless of religious composition, leaving Protestantism no margin on which to operate through basic skill accumulation.[23] The absence of a significant Protestant

[23] Municipal literacy rates across the Netherlands averaged 95.1 percent as early as 1890, with over 72 percent of municipalities exceeding 95 percent and nearly 19 percent exceeding 99 percent. Regional variation

literacy premium is therefore not a failure to detect an effect but evidence that the human capital channel, to the extent it operated at all, ran through the intensity of investment in schooling quality and upper-tail skills rather than through basic literacy acquisition.

The standardized β coefficients for human capital outcomes range between 0.19 and 0.40 across specifications, which are economically meaningful but considerably more modest than the standardized effects for social mobility documented in Table A.3. The human capital results also exhibit greater sensitivity to specification than the social mobility results: education spending effects are present across specifications while upper-tail effects emerge primarily with province fixed effects, and the literacy effect is absent throughout. This pattern of instability contrasts with the uniform robustness of the social mobility estimates and is consistent with human capital playing a supporting rather than primary role in the transmission of Protestant norms to economic outcomes in the nineteenth-century Netherlands.

5.3 Correlates of Development

Having established that Protestantism increased social mobility, had no detectable effect on financial development, and had mixed effects on human capital formation, we now ask which of these three channels best accounts for the development differences documented in Section 5.1. Table A.7 presents OLS estimates of the conditional correlations between each mechanism and our three development outcomes: income tax per capita in 1910 (Columns 1–3), total taxes per capita in 1889 (Columns 4–6), and car ownership per capita in 1920 (Columns 7–9). By including all three mechanisms simultaneously, we can assess which retains independent predictive power conditional on the others.

[Table A.7 here]

These results should be interpreted as descriptive evidence on the relative predictive power of each channel rather than as causal estimates. The sample is reduced to 230 municipalities, driven by data availability for the social mobility measure, which relies on granular nineteenth-century marriage records that are not digitally preserved for all Dutch municipalities.

The results reveal a clear hierarchy. Social mobility is the most robust and consistent predictor of economic prosperity across all three development outcomes. For fiscal outcomes (Columns 1–6), the coefficients are stable and significant, with standardized β coefficients ranging from 0.23 to 0.36. For car ownership (Columns 7–9), our most direct proxy for household affluence and modernization, social mobility is the only mechanism that retains statistical significance in the province fixed effects specification, with human

was modest: mean literacy ranged from 93.6 percent in Zuid-Nederland to 96.7 percent in West-Nederland, a difference of only three percentage points. These figures are drawn from the Provincial Records (*Provinciale Verslagen*).

capital and financial development both losing significance once regional heterogeneity is absorbed.

Human capital correlates positively with tax revenues (Columns 2–3 and 5–6), confirming a role in building fiscal capacity, but is uncorrelated with car ownership in any specification. The standardized effects for human capital are consistently smaller than those for social mobility, approximately half the magnitude across comparable specifications, reinforcing the interpretation that education played a supporting rather than primary role. Financial development exhibits the weakest and least consistent relationship with prosperity across all outcomes and specifications.

Taken together, these conditional correlations are consistent with the allocation mechanism we emphasize throughout the paper. Social mobility outperforms both competing channels not only in the Protestant effect estimates of the preceding sections but also in its independent association with long-run development conditional on those competing channels. This pattern suggests that the fluidity of occupational structures, rather than the accumulation of savings or skills, was the primary transmission channel linking Protestant institutional norms to municipal prosperity in the nineteenth-century Netherlands.

5.4 Robustness and Sensitivity Analysis

Our main findings are robust to alternative samples, inference strategies, and bandwidth choices. Tables E.17 and E.18 replicate the baseline development and social mobility estimates restricting the sample to municipalities within 10 km of the archdiocese boundary and/or using Conley (1999) spatial standard errors, and find large, positive, and statistically significant IV effects across all three outcomes.[24] Finally, Figure E.1 plots the IV estimates for all three development outcomes across bandwidths ranging from 5 km to 50 km; the coefficients remain positive and significant at the 1 percent level throughout, ruling out that the findings are artifacts of any particular bandwidth choice. Appendix Table E.20 rules out structural transformation as an alternative mechanism: Protestant share has no significant effect on the shares of employment in agriculture, industry, or services in either 1889 or 1930.

6 Conclusion

Did Protestantism generate lasting economic advantages, and if so, through which mechanisms? This paper provides causal evidence on both questions using a quasi-natural experiment based on the historical division of the Low Countries into two archdioceses in 1559. Municipalities assigned to the Archdiocese of Utrecht subsequently became predominantly

[24] Table E.19 compares the same narrow-bandwidth framework to the three mechanisms and confirms that social mobility remains the most robust and significant channel, human capital a secondary one, and financial development economically negligible.

Protestant, while those assigned to Mechelen remained predominantly Catholic. We exploit this boundary as an instrument for late-nineteenth-century Protestant shares and show that Protestantism had a large, positive, and robust causal effect on local economic development, measured by income tax revenues, total taxes, and car ownership.

Our central contribution is to identify the mechanism driving this effect. We test three channels that feature prominently in the literature: social mobility, human capital formation, and financial development. The evidence points clearly toward social mobility as the primary transmission channel. Protestant municipalities exhibited substantially greater intergenerational occupational mobility, both at the municipal level and at the level of individual father–son pairs, with the effect driven primarily by upward rather than downward occupational movement. This finding is robust across OLS and IV specifications, fixed effects structures, and sample restrictions.

The two alternative channels receive weaker and less consistent support. Human capital effects are present, particularly for education expenditures and upper-tail skills, but are smaller in magnitude and more sensitive to specification than the social mobility results. Critically, we find no significant Protestant premium in baseline literacy rates, consistent with the premise that basic literacy was already near-universal across Dutch municipalities by the late nineteenth century, leaving little margin for the accumulation channel to operate. Financial development finds no support: Protestant municipalities did not exhibit systematically higher savings or denser banking networks, and the negative savings correlations that appear in some specifications dissolve once province fixed effects are included. A horse race analysis conditioning on all three mechanisms simultaneously confirms that social mobility is the most robust and consistent predictor of prosperity across development outcomes and specifications.

These findings contribute to the Weber debate in two ways. First, they provide direct causal evidence for a social mobility channel that prior work invoking Protestant social ethics and impersonal exchange (Arruñada, 2010; Nunziata and Rocco, 2016) could not establish at scale. Second, they suggest that the relative importance of the allocation and accumulation channels is context-dependent: in settings where basic literacy was already widespread, as in the nineteenth-century Netherlands, it was the fluidity of occupational structures rather than their educational foundations that differentiated prosperous from stagnant communities. This qualification does not contradict Becker and Woessmann (2009) but rather delimits the scope of their argument, suggesting that the human capital channel was most consequential where literacy was scarce and that the allocation channel becomes dominant once that baseline constraint is relaxed.

More broadly, our results suggest that the structural flexibility of social hierarchies may be as consequential for long-run economic development as the accumulation of productive factors. Where inherited status strongly determined economic position, as in predominantly Catholic municipalities in the nineteenth-century Netherlands, the efficient allocation of talent was constrained regardless of the stock of human capital or savings available. Protestantism, by weakening the grip of inherited position on occupational out-

comes, helped unlock this constraint. Whether similar dynamics operated in other high-literacy Protestant contexts remains an open question and a promising direction for future research.

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A Tables and Figures Main Text

Table A.1: Descriptive Statistics

	Mean	Median	SD	Min	Max	N
Panel A: Dependent Variables						
Income Tax PC 1910	1.65	1.53	1.19	0.00	15.57	647
Total Taxes PC 1889	1.56	1.42	0.83	0.18	6.87	1077
Cars PC 1920	0.02	0.02	0.02	0.00	0.24	1072
Panel B: Independent Variables						
% Protestant (1879)	0.57	0.72	0.40	0.00	1.00	1130
Panel C: Instrumental Variables						
In Mechelen Archdiocese	0.33	0.00	0.47	0.00	1.00	1131
Distance to Archdiocese Border	-24.12	-14.71	62.37	-174.52	118.02	1131
Panel D: Intermediate Outcomes						
Saving banks count 1920	0.19	0.00	0.45	0.00	3.00	1131
Bank count 1920	0.99	0.00	6.34	0.00	171.00	1127
Savings per capita	21.33	14.52	26.37	-1.64	322.05	866
Primary educ. exp. PC 1910	2.91	2.77	1.96	0.00	19.22	647
Total educ. exp. PC 1887	2.44	2.25	1.33	0.00	18.94	1077
Upper-tail human capital	0.00	0.00	0.00	0.00	0.01	1077
Same profession	0.44	0.42	0.14	0.00	1.00	594
Social mobility	1.55	1.54	0.47	0.00	3.88	594
Social distance	3.23	3.00	1.30	0.00	12.97	594
Panel E: Controls						
Log(Area)	2.87	2.84	0.99	-0.69	5.82	1131
Agricultural Suitability	0.44	0.40	0.20	0.05	0.92	1131
Crop Suitability	-3.63	-539.10	1847.03	-2754.46	7505.58	1131
Caloric Suitability	2009.23	1991.16	56.08	1908.52	2182.67	1131
Municipality Area	28.74	17.18	34.88	0.50	337.69	1131
Coastal Distance	61.55	49.03	47.93	0.00	175.70	1131
Distance to River	21.75	11.76	24.59	0.00	92.93	1131
Elevation	10.60	0.79	26.06	-6.34	201.62	1131
Ruggedness	2.04	1.08	3.32	0.08	37.51	1118
Distance to Wittenberg	511.22	512.20	55.06	387.31	644.30	1131
City Exists (1560)	0.11	0.00	0.31	0.00	1.00	1131
Urban Potential (1560)	0.00	0.00	0.00	0.00	0.01	1127
Catholic Mission Dummy	0.21	0.00	0.41	0.00	1.00	1131
Battles in 80Y War	0.07	0.00	0.26	0.00	1.00	1131

Table shows descriptive statistics. Panel A contains dependent variables (development oucomes) used in this study. Panel B contains various snapshots of the independent variables used in this study. Panel C contains the instruments. Panel D contains the intermediate outcomes pertaining to the social structure, and Panel E contains control variables.

Table A.2: Protestantism and Economic Development

	Income Tax PC 1910			Total Taxes PC 1889			Cars PC 1920		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: OLS									
Protestant Share 1879	0.246**	0.101**	0.017	0.038	0.074	0.079	0.544	1.394	3.125
	(0.076)	(0.012)	(0.122)	(0.062)	(0.060)	(0.035)	(2.039)	(2.806)	(3.913)
R2 Adj.	0.152	0.215	0.165	0.253	0.307	0.279	0.155	0.161	0.173
Num.Obs.	656	656	656	649	649	649	620	620	620
Controls	No	Yes	No	No	Yes	No	No	Yes	No
Province FE	No	No	Yes	No	No	Yes	No	No	Yes
Standardized β	0.069	0.028	0.005	0.024	0.048	0.051	0.012	0.031	0.069
Panel B: IV									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Protestant Share 1879	1.47**	1.11*	1.23	0.02	0.03	0.18**	3.25***	5.09	11.21***
	(0.69)	(0.61)	(0.84)	(0.14)	(0.04)	(0.08)	(1.02)	(3.83)	(4.33)
Num.Obs.	656	656	656	649	649	649	620	620	620
First-Stage F-stat	65.613	29.697	19.186	34.795	61.493	17.830	30.856	95.766	12.204
Controls	No	Yes	No	No	Yes	No	No	Yes	No
Province FE	No	No	Yes	No	No	Yes	No	No	Yes
Standardized β	0.411	0.309	0.345	0.015	0.021	0.117	0.072	0.114	0.250

Table shows IV estimates of the effects of Protestantism on various development outcomes at the municipality level. Out of each three columns, the first equation represents estimates without controls, the second model is conditional on controls, and the third equation uses variation within provinces only. Standard errors based on Conley and Kelly (2025) are reported in parentheses.

Table A.3: Estimates of Protestantism on Social Mobility

	Same profession				Social mobility			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Protestant Share 1879	-0.09***	-0.17***	0.00	-0.05	0.66***	1.15*	0.49***	0.73*
	(0.03)	(0.06)	(0.07)	(0.15)	(0.19)	(0.61)	(0.12)	(0.44)
Num.Obs.	584	584	584	584	584	584	584	584
First-Stage F-stat	29.179	207.211	33.219	41.451	13.406	20.696	74.680	106.821
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Province FE	No	No	Yes	Yes	No	No	Yes	Yes
Standardized β	-0.030	-0.060	0.001	-0.019	0.772	1.345	0.576	0.853

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table shows IV estimates of the effects of Protestantism on Social Mobility in municipality i using the full sample with weights based on the distance to the border. The first set of regressions analyzes whether groom and father have the same profession. For the second set of regressions, social mobility is measures using HISCLASS. Out of each four columns, the first equation represents estimates without controls, the second model is conditional on controls, and the third equation uses variation within provinces only, and the fourth adds controls. Standard errors based on Conley and Kelly (2025) are reported in parentheses.

Table A.4: Protestantism and Social Mobility

	Social Mobility			Upward Social Mobility			Downward Social Mobility		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: OLS									
Protestant	0.134***	0.117***	0.086**	0.013*	0.011***	0.006	0.020***	0.017*	0.020**
	(0.040)	(0.044)	(0.036)	(0.007)	(0.004)	(0.006)	(0.005)	(0.009)	(0.010)
R2	0.125	0.298	0.199	0.123	0.432	0.339	0.118	0.302	0.219
Num.Obs.	89342	79509	89333	89342	79509	89333	89342	79509	89333
Municip. x Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Profession x Year FE	No	Yes	No	No	Yes	No	No	Yes	No
HISCLASS x Year FE	No	No	Yes	No	No	Yes	No	No	Yes
Panel B: IV									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Protestant	0.905***	0.893***	0.769**	0.138**	0.135**	0.090***	0.043	0.042	0.064
	(0.337)	(0.326)	(0.326)	(0.057)	(0.054)	(0.033)	(0.086)	(0.086)	(0.089)
R2	0.009	0.013	0.107	0.009	0.013	0.268	0.004	0.007	0.102
Num.Obs.	90225	90220	90211	90225	90220	90211	90225	90220	90211
Province + Year FE	Yes	No	No	Yes	No	No	Yes	No	No
Province x Year FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
HISCLASS x Year FE	No	No	Yes	No	No	Yes	No	No	Yes
1st Stage F Stat.	8701	8732.6	8808.7	8701	8732.6	8808.7	8701	8732.6	8808.7

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table shows IV estimates of the effects of Protestantism on social mobility outcomes at the individual level, instrumenting Protestant status with assignment to the Archdiocese of Utrecht versus Mechelen. The first specification includes province and year fixed effects. The second specification includes province-by-year fixed effects. The third specification additionally controls for father HISCLASS interacted with year fixed effects. Conley (1999) standard errors reported in parentheses.

Table A.5: Protestantism and Financial Development

	Saving Banks Count 1920			Bank Count 1920			Savings PC 1900		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Protestant Share 1879	0.02	-0.13**	0.52	0.34	-0.90	0.23	-0.78***	-0.68	-0.27
	(0.23)	(0.05)	(0.42)	(0.68)	(0.85)	(0.93)	(0.22)	(0.43)	(0.51)
Num.Obs.	843	843	843	843	843	843	843	843	843
Controls	No	Yes	No	No	Yes	No	No	Yes	No
Province FE	No	No	Yes	No	No	Yes	No	No	Yes
Standardized β	0.012	-0.064	0.266	0.018	-0.047	0.012	-0.249	-0.219	-0.086

Table shows IV estimates of the effects of Protestantism on various financial development-related outcomes in municipality i. Saving banks count and bank count are measured in 1920; savings per capita (log) is measured in 1900. Out of each three columns, the first equation represents estimates without controls, the second model is conditional on controls, and the third equation additionally includes province fixed effects. Standard errors based on Conley and Kelly (2025) are reported in parentheses.

Table A.6: Protestantism and Human Capital

	Primary Educ. Exp. PC 1910			Total Educ. Exp. PC 1887			Upper-tail Human Capital			Literacy Rate 1890		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Protestant Share 1879	1.242***	1.148***	1.643***	0.868***	0.892***	0.536	0.149	0.108	0.367**	3.893*	4.365*	5.739
	(0.327)	(0.267)	(0.624)	(0.198)	(0.196)	(0.352)	(0.096)	(0.140)	(0.155)	(2.326)	(2.316)	(5.705)
Num.Obs.	548	548	548	548	548	548	548	548	548	548	548	548
Controls	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No
Province FE	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Standardized β	0.212	0.196	0.280	0.341	0.350	0.211	0.114	0.082	0.281	0.250	0.280	0.368

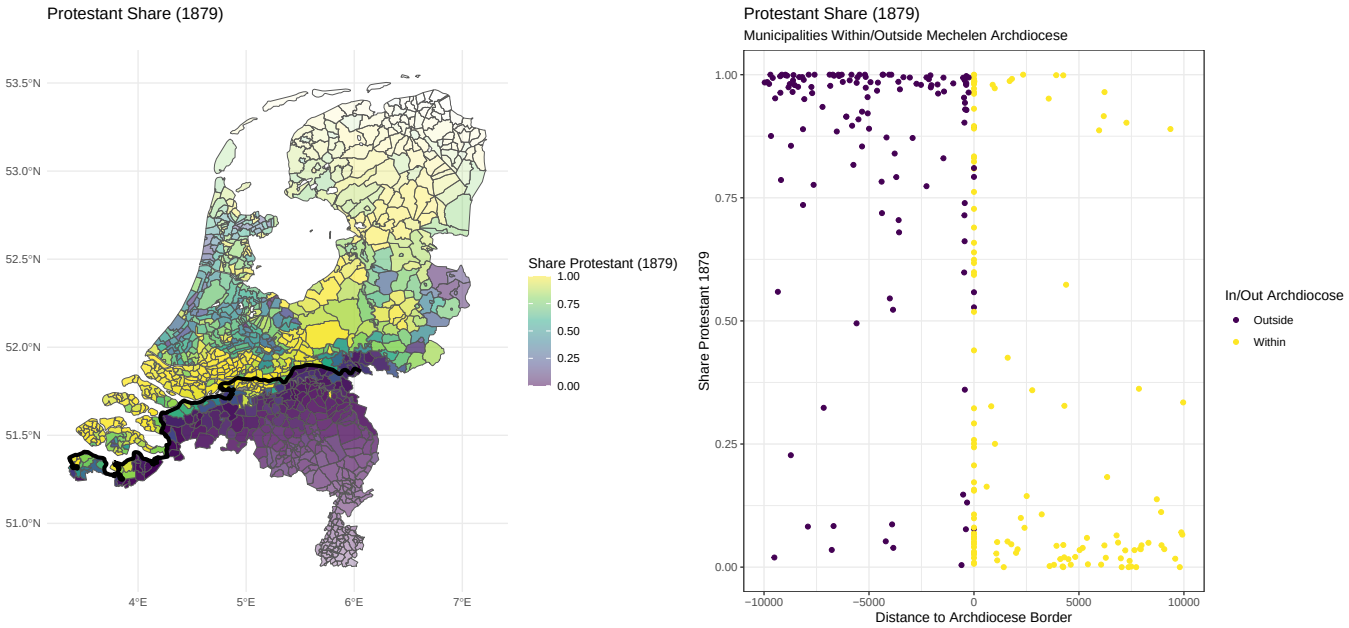
Table shows IV estimates of the effects of Protestantism on various human capital-related outcomes in municipality i. Out of each three columns, the first equation represents estimates without controls, the second model is conditional on controls, and the third equation additionally includes province fixed effects. Heteroskedasticity-robust standard errors are reported in parentheses.

Table A.7: Correlates of Development

	Total Income Tax PC 1910			Total Taxes 1889			Cars PC		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Social Mobility	0.34*	0.27*	0.30*	0.03*	0.03*	0.03*	1.71	1.42*	2.76**
	(0.14)	(0.12)	(0.13)	(0.01)	(0.01)	(0.01)	(1.79)	(0.41)	(0.45)
Human Capital		0.18**	0.18**		0.01*	0.01		0.27	0.53
		(0.06)	(0.07)		(0.00)	(0.00)		(0.87)	(0.90)
Financial Development		0.51	0.49		0.03**	0.03**		2.41	5.36
		(0.32)	(0.32)		(0.01)	(0.01)		(9.68)	(6.48)
Num.Obs.	230	230	230	230	230	230	230	230	230
R2 Adj.	0.178	0.207	0.241	0.388	0.400	0.396	0.277	0.272	0.432
Controls	No	Yes	No	No	Yes	No	No	Yes	No
Province FE	No	No	Yes	No	No	Yes	No	No	Yes
Standardized β_{SM}	0.296	0.233	0.262	0.357	0.310	0.312	0.070	0.058	0.113
Standardized β_{HC}		0.128	0.131		0.078	0.079		0.009	0.018
Standardized β_{FI}		0.145	0.140		0.113	0.115		0.032	0.071

Table shows OLS estimates of the correlations between various intermediate outcomes and economic development in municipality i. Out of each two columns, the first equation represents estimates without controls and the second model is conditional on controls. Standard errors based on Conley and Kelly (2025) are reported in parentheses.

Figure A.1: Border, Buffer and Protestant Shares (1879)



B Data Appendix

In this data appendix, we elaborate on the variables introduced in Section 4. We detail the primary historical sources, and describe the digitization, cleaning, and harmonization steps required to construct the municipality-level measures used in the analysis. We also explain the procedures for matching and provide validation checks to ensure consistency across data sources.

B.1 Independent Variables and Instrument

Industrial Revolution-era Municipal Religious Composition: We exploit the Dutch censuses (*Volkstellingen*) that provide an overview of the population per municipality as well as a head count per religious denomination. These censuses were administered in 1809 by the French government, and by the Dutch government in 1879, 1899, 1920 and 1930.[25] In addition to religious denominations, there are also categories for non-adherence to a religious denomination. The level of granularity is high: not only does it distinguish between the three principal religions Catholicism, Judaism and Protestantism, but it also distinguishes between myriad varieties of Protestantism.[26] We then use this to aggregate these denominations generally considered as Protestant to construct one Protestantism variable measuring the share of Protestant inhabitants in municipality i at time t.

Early Modern Municipal Religious Composition: To investigate persistence, we use data on the religious heritage of Netherlands from an open source project called ReliWiki, aimed at inventorying the Dutch religious heritage. This database contains an overview of all churches in Netherlands and explicitly attempts to construct a database not only of presently existing churches, but also of defunct churches, or destroyed churches. This project arguably represents the most reliable data source available about church presence in the past. The data also contain relevant metadata. Notably, this includes data on the denomination of the church and on the era in which the church was built. The data is not geocoded, but in about 98% of the cases, contains a postal code. Using a mapping between postal codes and coordinates, we then identify in which municipality the particular church was located. Then, for each polity, we compute the share of Catholic churches over all churches that existed according to this database at a particular point in time $t \in \{1600, 1700, 1800\}$.

Groom-Father Groom Pair Religious Affiliation: For our analyses on the individual level, we use data from *OpenArchieven*, the API portal for the Dutch Provincial Archives. We retrieve digitized and transcribed all available marriage records from the Civil Registry from 1830 to 1910. Based on these marriage records, we extract the names of the bride,

[25] Because the 1809 census is very incomplete, we use the 1879 as our baseline "contemporary" measure for Protestantism.

[26] There are even categories for denominations like Greek Orthodoxy and Anglicanism, which had very few adepts in the Netherlands.

groom and their parents as well as any miscellaneous persons mentioned in the marriage records. We then classify the persons involved in the marriage as being either Catholic, Protestant, or Unknown/Other. We validate this measure by aggregating the marriages to the municipal level, computing the share of Protestants as measured by classified marriages and comparing this to the census, and find a highly significant correlation and an R^2 of 0.95.

Archdiocese border and distance: We digitize the Mechelen-Utrecht Archdiocese border based on Rogier (1947) using qGIS. We then use this border to determine which municipalities are in which archdiocese, and how far away they are from the border.

B.2 Municipality-level Development Outcomes

Income Taxes: We use the total tax income (*belasting naar geschat inkomen* per capita in municipality i in 1910, as it is the most explicit available measure of municipal economic activity (Becker and Woessmann, 2009). These data come from the balance sheets detailing the municipal finances over the course of this period in the Provincial Records (*Provinciale Verslagen*) (see e.g. Provinciale Verslagen, 1920).[27]

Wealth Tax: From the Provinciale Verslagen (*Provincial Records*), we collect data on the total per capita revenue from the wealth tax (*personeele belasting*) as well as the share of the population liable to pay it. These measures serve as additional proxies for the economic activity and wealth distribution within a municipality.

These indicators also come with limitations. Because they are derived from tax registers, they capture the taxable base of municipalities but do not reflect the lower end of the income or wealth distribution, where exemptions and non-liable households are concentrated. Our analysis therefore provides robust evidence on differences in overall fiscal capacity but cannot speak directly to outcomes at the bottom of the distribution.[28]

B.3 Intermediate Outcomes

In trying to explain our results, we focus on various intermediate outcomes likely responsible for the obtained religious differences in development.

Social Mobility: From *OpenArchieven*, we collect digitized and transcribed marriage records from the Civil Registry from 1880 to 1900 for all Dutch municipalities. Based on these, we calculate a measure social mobility using a description of the profession of the groom and the father of the groom in marriage i, defined as follows:

[27] In robustness checks, we use these same measures in different years, to make sure our results aren't an artifact of one particular outlier year.

[28] As such, it does not contradict complementary claims, such as those advanced by Schaff (2024), that religious composition may have shaped inequality at the lower tail of the wealth and income distribution.

$$\text{Social Mobility}_i = |\text{Profession Class Groom}_i - \text{Profession Class Father Groom}_i|,$$

the absolute value reflecting that social mobility is not *just* upward mobility. To arrive at the professional class, we classify a large variety of different professions according to the HISCO system (Van Leeuwen et al., 2002), which classifies professions based on string descriptions into 13 ordinal classes. This also accommodates differences in description and spelling for professions that are virtually identical. To arrive at a measure for social mobility at the municipal level, we then calculate the unweighted mean of the absolute HISCLASS difference across all valid father-groom pairs in each municipality. No minimum observation threshold is imposed: every municipality with at least one pair for which both the groom's and the father's occupation could be classified is included, which yields coverage for approximately 584 municipalities. Appendix Table E.7 confirms that municipalities in and out of this subsample are balanced on the key pre-treatment characteristics used in the main analysis.

Social Distance: As a complementary measure of occupational stratification, we construct a social distance index using the Historical International Social Class Analysis Method (HISCAM). HISCAM assigns each occupation a continuous prestige score ranging from 0 to 99, where higher values correspond to higher social standing. Two variants are used: the universal HISCAM-U1 score and the Netherlands-specific HISCAM-NL score (Van Leeuwen et al., 2002). For each father–groom pair i in the marriage records, social distance is defined as

$$\text{Social Distance}_i = |\text{HISCAM Score Groom}_i - \text{HISCAM Score Father Groom}_i|,$$

the absolute difference in HISCAM scores between the groom and his father, so that larger values reflect greater intergenerational occupational movement regardless of direction. The municipal-level measure is the unweighted mean of this absolute difference across all valid father–groom pairs in each municipality.

Municipal-level Generalized Trust: Next, we use data on associations from the *Dutch Acknowledged Associations 1855-1903*. These associations were often explicitly religious associations. We interpret this as a proxy for trust at the municipal level.

Municipal Financial Development: Drawing on data from De Vicq (2024) and the accompanying Dutch Banking Landscape database, we compute a measure of financial development based on the number of savings banks (*spaarbanken*) and general banks present in each municipality in 1880. The database provides geocoded information on all financial institutions active in the Netherlands between 1880 and 1940, recorded at 20-year intervals. We use the 1880 cross-section because it falls within our main study period and avoids the confounding effects of World War I and post-war financial disruption; results using 1920

data are virtually identical. We focus on savings banks because they were established in the early nineteenth century to help lower-middle-class workers and small business owners accumulate financial reserves and protect against economic hardship. This aligns closely with Webers view of thrift and savings as key drivers of economic development. We also include log savings per capita in 1900 as a third proxy, provided by Ruben Peeters and Milan Dupont from the Social History of Finance Group.[29]

Municipal Human Capital: From the Provincial Records in 1910, we measure the expenditures for primary education of each municipality i per capita to derive a measure of educational expenditures per capita. Based on Dittmar and Meisenzahl (2016), we also investigate a measure of *upper tail human capital*. Borrowing their approach, we processed, and then geocoded and count the number of entries in the Dutch Biographical Dictionary from 1880-1930 of births in each municipality, and divide by the municipality's population in 1880.

B.4 Control Variables

Agriculture: We include a composite index of the suitability of land for agriculture. The suitability of land for agriculture (Ramankutty et al., 2001) has become a standard control for the effect of geographical characteristics on comparative economic development. In particular, geographical regions that according to this measure are comparable in terms of their suitability for agriculture may differ significantly in their potential caloric output per hectare per year, reflecting the fact that land that is suitable for agriculture is not necessarily suitable for the most productive crops in terms of their caloric return. Furthermore, based on findings from Vollrath (2011), using contemporary measures of agricultural suitability incurs the risk of being affected by contemporary land usage, by which the Galor and Özak (2015) index is unaffected. Hence, we use the data from Galor and Özak (2015, 2016) on caloric suitability.[30]

Geographic Controls: In addition, we also include controls regarding the average crop suitability in each municipality i for the four household crops in the Netherlands in the period under investigation: barley, rye, wheat, and oats. We obtain these data from the Global Agro-Ecological Zones data from the The Food and Agriculture Organization of the United Nations (FAO). We also control for the distance to the nearest river and to the coast, using data from Open Street Map. Furthermore, we control for elevation and the total ruggedness index, which we take from the Shuttle Radar Topography Mission (SRTM) at a 30 arc-seconds resolution. Finally, we also compute the area of each municipality.

[29] We also include a specification that accounts for all banks offering savings services. Credit cooperatives are excluded, as their expansion began only after our period of interest (Colvin, 2017).

[30] The data encompass two distinct indices: one pre-1500 index, and one after 1500, taking into account the broader set of crops that became available for cultivation in the course of the Columbian Exchange. The pre-1500 index, in contrast, is based only on crops that were available before the Columbian exchange. The indices capture the variation in potential crop yield across the globe, as measured in calories per hectare per year. We use the pre-1500 index.

Distance to Wittenberg: The distance to Wittenberg is an often-used control for the presence of Protestantism (see e.g. Becker and Woessmann, 2009; Cantoni, 2012; Becker et al., 2016). Even though less relevant to the Netherlands, as the most popular forms of Protestantism became varieties of Calvinism, it is still included to control for the proximal temporal spread of Protestant ideas. For similar reasons, we also include religious denomination as of 1624 as an instrument, following Spenkuch (2017).

City Status: We use data from Visser (1985) and Lourens and Lucassen (2025), who compile data on the existence and estimated population of all Dutch cities in the late Medieval era in the years 1560, 1400, 1300 and 1200, based on archeological sources. Because cities that have existed longer might show higher levels of economic development, we control for city status (Bosker et al., 2013).

Urban Potential: From Bosker et al. (2013) and Curuk and Smulders (2016), we compute the urban trade potential of each city by making use of population counts in about 1590, and distances between city i and other cities:

$$UP_i = \sum_{j \neq i}^{N} \frac{\text{Population}_j}{D_{ij}}$$

Battles in the 80 Years War: We use information on battles fought in the 80 years war, which were frequently accompanied by large-scale destruction, to control for eventual differences in development originating in these historical episodes.

Catholic Mission: We digitize and use a map provided by Rogier (1947), depicting the location of Catholic missions in the Protestant-dominated Republic of the United Netherlands. As mentioned in Section 3, public profession of the Catholic religion had become illegal after 1581, and for some time the area under the Utrecht archdiocese became a mission area, in which there was no longer a full-fledged Catholic church organization with an episcopal hierarchy. The purpose of the Dutch Mission was to maintain the Catholic faith and served as a substitute for the traditional episcopal organization of the Catholic church (Rogier, 1947). Because places that were targeted as a Catholic mission might have been subject to extra effect on behalf of the Catholic church to retain Catholicism, we either control for this or exclude these places from the analyses.

Placebo Borders: We also use shapefiles encompassing the borders of the Republic of the Seven United Netherlands (Stapel, 2016), and we use the Roman Empire border in 110 AD from the Ancient World Mapping Center. From this, we construct variables indicating whether municipality i was located inside the former Roman Empire and the Republic of the Seven United Netherlands, and the distance to their respective borders, measured as positive if located inside and negative if located outside. We also included the borders between the Duchy of Brabant and the Gist of Utrecht during the High Middle Ages.

B.5 Data Timeline

Table B.1 summarises all primary data sources used in the analysis, the year or period to which each variable pertains, and the step in the data pipeline at which it enters the analysis dataset.

B.6 Spatial Inference Procedure

All estimates in the paper are reported with standard errors based on the Conley and Kelly (2025) spatial inference procedure, implemented via the `spatInfer` R package. We describe the procedure step-by-step here for full transparency.

Step 1: Spatial basis functions. The procedure begins by projecting the outcome variable onto a set of spatial basis functions to absorb any smooth, large-scale spatial trend that is unrelated to the treatment. Concretely, it fits a tensor-product B-spline in longitude and latitude with K interior knots, and then retains the leading P principal components (PCs) of the resulting basis matrix. Both K and P are chosen by leave-one-out cross-validation, minimising out-of-sample prediction error over the grid $K \in \{1, \ldots, 7\}$. This step ensures that the identifying variation stems from variation close to the historical border rather than from a broad regional gradient. Appendix Table E.14 reports the selected knot count (K) and PC count (P) for each of the five main outcomes; across outcomes the procedure selects between 3 and 7 knots and between 1 and 20 PCs, with higher-dimensional basis representations for outcomes with more spatial structure (total taxes, cars per capita).

Step 2: Placebo-based cluster selection. Having removed the spatial trend, the procedure selects the number of spatial clusters C for computing standard errors via a randomisation test. For each candidate $C \in \{1, \ldots, C_{\max}\}$, it randomly permutes the residual outcome (net of the spatial trend) across municipalities 500 times. In each permutation it recomputes the coefficient-to-standard-error ratio, and records the fraction of permutations that would reject the null at the nominal 5% level – the *placebo rejection rate*. The target range for a correctly-sized test is 4–10%. Among all C values whose placebo rejection rate falls within this band and whose estimated p-value is within 6 percentage points of the placebo rate, the procedure selects the C that yields the narrowest confidence interval.

Step 3: Realised diagnostics. Appendix Table E.14 reports, for each outcome: the chosen cluster count, the realised placebo rejection rate, the estimated p-value, and the p-value when the cluster count is perturbed by ± 2. Note that these diagnostics report the *reduced-form* specification (outcome regressed on *in_mechelen* plus controls) rather than the 2SLS estimates; the 2SLS p-values reported in the main tables are obtained via the

delta method applied to the same spatial basis. Across the five main outcomes placebo rejection rates lie between 4.2% and 9.0%, confirming that the procedure is well-calibrated at conventional significance levels. For the primary fiscal and human capital outcomes—income tax per capita ($p = 0.012$), social mobility ($p = 0.066$), and literacy ($p = 0.020$)—p-values remain below 0.10 across ± 2 cluster perturbations, confirming robustness to this modelling choice. The total tax and car ownership outcomes show greater cluster sensitivity in the reduced-form, reflecting a weaker direct relationship between archdiocese-side assignment and these secondary proxies; the main-table IV estimates for these outcomes are driven by the strong first stage rather than by a large reduced-form effect.

Table B.1: Data Sources, Measurement Periods, and Pipeline Steps

Variable / Source	Source	Year	Pipeline step
Pre-treatment instruments and controls			
Archdiocese of Mechelen (1559 boundary)	Dierickx (1950); digitized	1559	`muni_step3`
Brabant / Zeeland border (1437–38)	Stapel & Leupen; digitized	1437	`muni_step3`
Roman Empire border (110 AD)	Ancient World Mapping Center	110	`muni_step3`
Republic border (1588–1795)	Stapel (2016)	1588	`muni_step3`
80 Years' War battles	Wikipedia (2025)	1568–1648	`muni_step2`
Caloric / agricultural suitability	Galor and Özak (2016)	Pre-1500	`muni_step1`
Elevation, ruggedness	SRTM / CGIAR	–	`muni_step2`
Catholic mission churches	Rogier (1947)	Post-1580	`muni_step2`
Treatment variable			
Protestant share 1879	HDNG *Volkstelling* 1879	1879	`muni_step1`
Religious HHI 1879	HDNG *Volkstelling* 1879	1879	`muni_step1`
Early modern church presence	ReliWiki	1600–1800	`muni_step1`
Covariates / controls			
Municipal population	HDNG *Volkstelling* 1879	1879	`muni_step1`
Area	CBS 1879 shapefile	1879	`muni_step2`
Net migration flows	HDNG	1851–1890	`muni_step2`
Urban potential	HDNG population + distances	1879	`muni_step2`
City in 1560 (dummy)	Historical city atlas	1560	`muni_step2`
Economic outcomes			
Income tax per capita	CBS fiscal records	1910	`muni_step4`
Total taxes per capita	CBS fiscal records	1889	`muni_step4`
Cars per capita	CBS vehicle census	1910	`muni_step4`
Saving banks count	DBL banking landscape	1880	`muni_step4`
Bank count	DBL banking landscape	1880	`muni_step4`
Savings per capita (log)	HDNG Spaarbanken	1900	`muni_step4`
Industrial employment shares	HDNG beroepstelling	1909	`muni_step4`
Mechanism variables			
Social mobility index (HISCLASS)	OpenArchieven civil marriage records	1830–1910	`muni_step6`
Same-profession rate	OpenArchieven civil marriage records	1830–1910	`muni_step6`
Social distance (HISCAM)	OpenArchieven civil marriage records	1830–1910	`muni_step6`
Primary education expenditure p.c.	*Provinciale Verslagen*	1910	`muni_step4`
Total education expenditure p.c.	*Provinciale Verslagen*	1887	`muni_step4`
Literacy rate	Akçomak et al. (2016); *Volkstelling*	1890	`muni_step6`
Upper-tail human capital (BWN)	*Biographisch Woordenboek*	1830–1940	`muni_step5`
Civic associations count	*Erkende Verenigingen* 1855–1903	1855–1903	`muni_step5`

Notes: HDNG = Dutch Historical Municipal Database (IISG Amsterdam, `hdl:10622/RPBVK4`). DBL = Dutch Banking Landscape 1880–1940. SRTM = Shuttle Radar Topography Mission. BWN = *Biographisch Woordenboek van Nederland*. All pipeline steps read the previous step's `.geojson` output and write the next; the final dataset is `step6_human_capital.geojson`.

C Identifying the Causal Effect of Protestantism

This appendix provides additional historical context and further empirical validation of the research design. We first document that the historical boundary between the Archdioceses of Utrecht and Mechelen produced a persistent and discontinuous change in religious composition. We then show that other historically salient borders do not generate similar patterns. Finally, we demonstrate that, apart from religion, no observable geographic, agronomic, or institutional characteristics change discontinuously at the boundary, supporting the exclusion restriction.

C.1 Persistence of Religion

In this section, we present evidence of the persistence of religious affiliation at the municipality-level after the dust of the Reformation and Counter-Reformation had settled. This has two purposes: first it serves to reinforce the argument that the shock in religious affiliation induced by the allocation of municipalities to an archdiocese was a one-time shock and that there were no significant perturbations afterwards. Second, as put forward by Casey and Klemp (2021), we aim to estimate a persistence parameter to find out to what extent our estimates in Section 5.1 are to be interpreted as *ceteris paribus* estimates. To do this, we rely on firstly on the census data and compute the correlation between two successive census waves, in 1809 and 1879 respectively. We estimate the following equation:

$$\mathrm{R}(C)_i = \lambda_0 + \lambda_1 \cdot \mathrm{R}(\mathrm{H})_i + Z_i\lambda_2 + \epsilon_i \tag{4}$$

where $R(C)$ represents either the "contemporary" Protestant Share in 1879 originating from the population censuses, or the "contemporary" Share of Catholic Churches in a municipality (over all churches) in 1800 respectively. These are then related to previous ("historical") iterations of the same indicator at time H, equal to 1809 for the census analysis and to 1600 and 1700 for the church share analysis. In line with the framework of Casey and Klemp (2021), to arrive at an interpretation of λ_1 reflecting the persistence, we then instrument $R(H)$ by the exogenous shock, in our case, In Archdiocese$_i$, while at the same time limiting the bandwidth to 10 kilometers in our default specifications. We then augment these specifications by control variables and fixed effects. Finally, we also estimate the (conditional) correlation between the 1879 Census Share of Protestants and the 1600 and 1800 share of Catholic churches proxies, to argue that not only do they show a high degree of persistence over time, but they are also highly correlated, as one expects, as they should both be measuring religious composition.

Table E.2 provides visual evidence of a sharp spatial discontinuity in religious composition at the historical border between the Archdiocese of Mechelen and the Diocese of Utrecht. Columns 13 report estimates of the persistence of the Protestant share across municipalitiesfirst unconditionally, then conditional on controls, and finally including both

controls and fixed effects. To examine religious persistence prior to the availability of census data, we additionally use historical information from the ReliWiki database on the religious affiliation of churches in the Netherlands. For $t \in 1600, 1700, 1800$, we calculate the share of Catholic churches relative to the total number of churches in municipality i by year t. Columns 45 then estimate the persistence of the Catholic church share between 1600 and 1700, and between 1700 and 1800, respectively.

[Table E.2 here]

Throughout columns 1-5, we observe point estimates that are very close to 1, indicating an almost perfect stability in religious adherence at the municipal level. Especially in the precisely measured census data this pattern is apparent, with the R^2 being essentially equal to 1. In the religious heritage data, religious adherence is measured with more noise. Nevertheless, even here, the R^2 statistic, conditional on controls, is also nearly equal to 1.

C.2 Placebo Borders

In this section, we rule out alternative explanations that attribute confessional differences to other historical frontiers, namely the borders of the Roman Empire, the Dutch Republic, and the Duchy of Brabant.

Christianization in the Roman province which included parts of modern-day Netherlands, began during the late Roman Empire. Early Christian influences arrived with Roman soldiers, merchants, and missionaries, but widespread conversion was slow due to the dominance of Germanic pagan traditions. By the 4th and 5th centuries, Christianity gained a stronger foothold as the empire officially adopted the faith under Constantine and later Theodosius I. Van Vlierden (1995) notes that there is evidence that the southern parts of the Netherlands were already Christened by about 600. If a longer tradition of Christianity is associated with a decreased likelihood of exchanging Catholicism for Protestantism, the Roman Empire might have instead been responsible for a discontinuous change in the spatial distribution of religion, rather than the previously mentioned Archdiocese border. Furthermore, even after the demise of the Roman Empire, it could still have been responsible for discontinuities in the adoption of Protestantism, for example, by providing the infrastructure which missionaries could use to permeate Catholicism (Dalgaard et al., 2022).

The Dutch Republic was a confederation of seven provinces in the Low Countries in the 16th, 17th, and 18th centuries. Established during the Eighty Years' War (15681648) against Spanish rule, it gained independence from the Spanish Empire and became a major economic and naval power in Europe (Gelderblom, 2016; Prak, 2023). Religion played a significant role in the history of the Dutch Republic, and one of the primary reasons for the Dutch Revolt against Spanish rule was religious freedom. However, after the establishment of the Republic, Catholicism was outlawed, which marked the beginning of episodes of repression of Catholicism (Israel, 1995; Lenarduzzi, 2003). Hence, while the Dutch Republic

established tolerance, but this tolerance was not absolute (Rogier, 1947; Prak, 2023).[31] By changing the costs of adherence to Catholicism, this might lead to a discontinuous change in Catholicism among places that were just at the borders of the Dutch Republic.

The Duchy of Brabant represents another historically significant boundary. Established in the High Middle Ages, the Duchy encompassed territories now divided between the Netherlands and Belgium and persisted as a major political and ecclesiastical entity until the late eighteenth century. As Brabant straddled the later MechelenUtrecht divide, its internal jurisdictions could have influenced the regional balance between Catholic and Protestant institutions, potentially generating religious heterogeneity independent of the archdiocesan boundary.

To test which of these borders is most plausibly responsible for adoption of Protestantism, we estimate the following first-stage specification, for municipality i : $\text{Dist}_{i,b} \leq 10\text{km}$:

$$\text{Share Protestant } 1879_i = \alpha_0 + \alpha_1 \cdot \text{In Polity } j_i + X_i\alpha_2 + \epsilon_i$$

.

Table E.3 compares the explanatory power of the MechelenUtrecht boundary with other historically salient frontiers. For each specification, we report the partial F-statistic on the coefficient of interest (α_1), which captures the strength of the respective border $j \in RE, DR, AD$ in predicting religious adherence. In the benchmark regression without controls, municipalities under Archdiocese Mechelen have Protestant shares 0.48 lower than those under Archdiocese Utrecht (partial-F = 24.2). Including full controls attenuates the estimate to 0.32 (partial-F = 7.7), but the association remains strong. Both statistics exceed conventional thresholds, indicating a powerful first stage. Applying the same regression discontinuity design to the alternative borders yields no comparable predictive power for the ProtestantCatholic distribution.

[Table E.3 here]

C.3 Discontinuity at the border

For the exclusion restriction to be credible, the archdiocesan boundary must not coincide with systematic differences in other determinants of long-run development. In other words, apart from its effect on religious adherence, the border should be orthogonal to relevant geographic, institutional, and historical fundamentals.

A first concern is that the boundary might reflect underlying geographic or agronomic divides. If the Mechelen side were systematically more fertile, elevated, or better con-

[31] Formally, an article in the Treaty of Utrecht stipulated that "each person shall remain free in his religion and (...) no one shall be investigated or persecuted because of his religion" (Prak, 2023, p. 208). However, Prak (2023, p. 219) also notes that "nearly everywhere, people who were not Reformed were actively hindered in the practice of their religious rites."

nected, subsequent prosperity could be attributed to these fundamentals rather than to confessional composition. E.4 alleviates this concern: municipal area, elevation, ruggedness, and agricultural suitability are all continuous at the cutoff. Distances to rivers and to the coast likewise vary smoothly, with no evidence of a discontinuity at the border. A second concern is that the boundary may have coincided with pre-existing patterns of institutional development. The presence and proximity of cities have long been recognized as important determinants of economic development, given their roles as centers of trade, governance, and innovation. If municipalities on the Mechelen side systematically lay closer to existing cities, or hosted more urban settlements, subsequent differences in prosperity might reflect these urban advantages rather than religious composition. Our evidence indicates otherwise: the distribution of cities and their distance to municipalities in 1200, 1300, and 1560 is virtually identical on both sides of the border, with no evidence of a discontinuity at distance zero.

A third objection pertains to exposure to conflict. Although the Eighty Years War commenced after the diocesan division, one might worry that its destructive effects were concentrated disproportionately on one side of the line. Again, Table E.4 shows otherwise: municipalities on both sides experienced battles at similar rates, with no discernible break at the boundary. While these measures are not strictly pre-treatment, their smoothness strengthens the interpretation that the boundary is not proxying for subsequent historical shocks.

[Table E.4 here.]

In conclusion, the historical and econometric evidence provides compelling support for the validity of the instrument. The 1559 Archdiocese boundary produced sharp and persistent discontinuities in religious adherence that align precisely with the historical demarcation. By contrast, geographic characteristics, patterns of urban proximity, and conflict exposure exhibit continuity across the boundary, while placebo borders show no association with confessional composition.

D Formal Derivation of Hypotheses

D.1 Overview

This appendix develops a unified two-generation model that formally derives the hypotheses advanced in Section 2. The framework is built on a single dynastic utility function in the spirit of Becker and Tomes (1986), in which a parent chooses both an occupation and how much of a religion-specific disposition to transmit to her child. The intergenerational link is therefore endogenous: parents optimally shape the traits that govern their children's occupational choices.

Two religion-specific parameters discipline the model. First, following Arruñada (2010), Protestant communities sustain a social-capital externality through mutual religious monitoring: collective religiosity raises the expected return to high-skill mobile occupations. Second, following Nunziata and Rocco (2016) and Doepke and Zilibotti (2008), Protestant theology lowers the cost of transmitting an occupationally mobile disposition across generations. Together these two channels generate three propositions. Propositions 1 and 2 establish that Protestant dynasties attain higher occupational status within a generation. Proposition 3 establishes that they also exhibit lower intergenerational persistence of occupational rank.

D.2 Environment

D.2.1 Occupations and the Religiosity Externality

Consider a community of measure one populated by dynasties indexed by religion $D \in \{P, C\}$ (Protestant or Catholic). Within each generation, each agent chooses an occupation $s \in \{0, 1\}$, where $s = 0$ denotes a *traditional* occupation and $s = 1$ a *mobile* occupation. Expected wages are

$$w(s, R) \;=\; (1 - s)\, w_l \;+\; s\,(\mu + \rho R), \qquad \mu > w_l, \quad \rho > 0, \tag{1}$$

where R is mean community religiosity and ρR is the Arruñada (2010) externality: collective religious participation lowers transaction costs and raises expected wages in mobile occupations. The traditional occupation pays a fixed wage w_l.

D.2.2 Dispositions and Occupational Choice

Each agent i carries a *disposition* $\theta_i \in [0, 1]$, which governs her tolerance for the demands of mobile work. Higher θ means greater tolerance. The cost of choosing occupation s for an agent with disposition θ_i is

$$c(s, \theta_i) \;=\; s \cdot \frac{\gamma}{2}(1 - \theta_i)^2, \qquad \gamma > 0. \tag{2}$$

The traditional occupation is costless to take up; the mobile occupation imposes a psychic cost that falls as θ_i rises, vanishing when $\theta_i = 1$. The agent's net payoff from occupational choice is therefore

$$v(\theta_i, R) \;=\; \max_{s\in\{0,1\}} \Big\{ w(s, R) - c(s, \theta_i) \Big\}. \tag{3}$$

Substituting (1) and (2), the agent chooses $s_i = 1$ if and only if

$$(\mu + \rho R) - \frac{\gamma}{2}(1 - \theta_i)^2 \;\geq\; w_l. \tag{4}$$

Define the *occupational premium* $\Delta(R) := \mu - w_l + \rho R > 0$. Condition (4) is equivalent to

$$\theta_i \;\geq\; \bar{\theta}(R) \;:=\; 1 - \sqrt{\tfrac{2\Delta(R)}{\gamma}}, \tag{5}$$

where we set $\bar{\theta}(R) = 0$ whenever $\Delta(R) \geq \gamma/2$. Because $\Delta(R)$ is strictly increasing in R, the threshold $\bar{\theta}(R)$ is strictly decreasing in R: higher communal religiosity widens the set of dispositions compatible with choosing the mobile occupation.

D.2.3 Religiosity

Each agent also chooses a level of religious participation $r_i \in [0, 1]$ at convex cost $\frac{k}{2} r_i^2$. Every agent values their own participation directly at rate $\alpha > 0$. Protestant agents additionally value the interaction of their own participation with mean community religiosity R at rate $\beta > 0$, capturing the Arruñada (2010) claim that Protestants internalise communal norms as a reputational asset:

$$\pi(r_i, R; D_i) \;=\; \alpha r_i + D_i \beta r_i R - \frac{k}{2} r_i^2. \tag{6}$$

In a symmetric equilibrium $R = r_i$. Optimising (6) over r_i yields

$$r_P^* \;=\; \frac{\alpha}{k - \beta} \;>\; r_C^* \;=\; \frac{\alpha}{k}, \tag{7}$$

where the inequality holds under $k > \beta > 0$. Protestant communities therefore sustain strictly higher equilibrium religiosity, and consequently a higher mobile-wage premium ρR_D^*.

D.2.4 Dynastic Preferences and Disposition Transmission

Following Becker and Tomes (1986) and Doepke and Zilibotti (2008), each parent cares about her own payoffs and about her child's lifetime welfare. In addition, the parent chooses an investment $m_i \geq 0$ in transmitting her disposition to the child. The child's

disposition evolves as

$$\theta_i' \;=\; \theta_i + m_i - \eta + \varepsilon_i, \qquad \varepsilon_i \sim \mathcal{N}(0, \sigma_\varepsilon^2), \tag{8}$$

where $\eta > 0$ is a mean-reversion parameter—absent investment, the child's disposition regresses toward the population mean—and ε_i is an idiosyncratic shock capturing the imperfect nature of cultural transmission.

The dynastic objective for agent i with religion D is

$$\max_{s_i, r_i, m_i} \left\{ v(\theta_i, R) + \pi(r_i, R; D_i) + \delta\, \mathbb{E}\big[V(\theta_i')\big] - \frac{\kappa_D}{2} m_i^2 \right\}, \tag{9}$$

where $\delta \in (0,1)$ is the altruism parameter, $V(\theta')$ is the child's continuation value (defined below), and $\frac{\kappa_D}{2} m_i^2$ is the cost of disposition investment. The key religion-specific parameter is

$$\kappa_P \;<\; \kappa_C, \tag{10}$$

reflecting that Protestant communities impose lower barriers to occupational mobility, so that investing in a child's mobile disposition is cheaper for Protestant parents. This is the formalisation of the Nunziata and Rocco (2016) argument, read through the preference-transmission lens of Doepke and Zilibotti (2008).

Problem (9) is identical in structure for both generations. The parent and child solve the same optimisation problem; the only objects that differ across generations are the inherited disposition θ and the equilibrium community religiosity R_D^*.

D.3 Equilibrium

D.3.1 Child's Value Function

In a stationary equilibrium, community religiosity R_D^* is constant across generations. The child enters adulthood with disposition θ' and solves problem (9), taking R_D^* as given. Her value function is

$$V(\theta') \;=\; \max_{s', r', m'} \left\{ v(\theta', R_D^*) + \pi(r', R_D^*; D) + \delta\, \mathbb{E}[V(\theta'')] - \frac{\kappa_D}{2} m'^2 \right\}, \tag{11}$$

where $\theta'' = \theta' + m' - \eta + \varepsilon''$ and $\varepsilon'' \sim \mathcal{N}(0, \sigma_\varepsilon^2)$. This is the same optimisation problem as (9): the child, when she becomes a parent, chooses occupation, religiosity, and transmission investment simultaneously. In a stationary equilibrium, R_D^* and the functional form of V are constant across generations. For the comparative-statics results below, it suffices to note two properties of the stationary V:

Property 1. $V'(\theta') > 0$: a higher inherited disposition raises the net return to the mobile occupation, so the continuation value is strictly increasing in θ'.

Property 2. $V''(\theta') > 0$ in a neighbourhood of the occupational threshold $\bar{\theta}(R_D^*)$: because the payoff function v has a kink at the threshold, V is locally convex there, giving parents near the threshold a high marginal incentive to push their child over it.

D.3.2 Optimal Disposition Investment

The first-order condition for m_i in problem (9) is

$$\delta\, V'(\theta_i') \;=\; \kappa_D\, m_i^*, \tag{12}$$

giving optimal investment

$$m_i^* \;=\; \frac{\delta\, V'(\theta_i')}{\kappa_D}. \tag{13}$$

Since $V'(\theta') > 0$, both groups invest positively. Since $\kappa_P < \kappa_C$, Protestant parents invest strictly more than Catholic parents at every disposition level:

$$m_P^*(\theta) \;>\; m_C^*(\theta) \quad \text{for all } \theta. \tag{14}$$

D.4 Comparative Statics and Propositions

D.4.1 Proposition 1: Protestants Are More Likely to Enter Mobile Occupations

Proposition 1. *Suppose initial dispositions are drawn from the same distribution F in both communities. In a symmetric stationary equilibrium, the fraction of agents choosing the mobile occupation is strictly higher in Protestant communities:*

$$\Pr(s^* = 1 \mid D = P) \;>\; \Pr(s^* = 1 \mid D = C).$$

Proof. Agent i selects $s = 1$ iff $\theta_i \geq \bar{\theta}(R_D^*)$ (from condition 5). The share choosing $s = 1$ is $1 - F(\bar{\theta}(R_D^*))$.

From (5), $\bar{\theta}(R)$ is strictly decreasing in R. From (7), $R_P^* > R_C^*$. Therefore

$$\bar{\theta}(R_P^*) \;<\; \bar{\theta}(R_C^*).$$

Since F is non-decreasing, $1 - F(\bar{\theta}(R_P^*)) > 1 - F(\bar{\theta}(R_C^*))$. ■

D.4.2 Proposition 2: Mobile-Occupation Wages Are Higher in Protestant Communities

Proposition 2. *In a symmetric stationary equilibrium, the expected wage conditional on choosing the mobile occupation is strictly higher in Protestant communities:*

$$\mathbb{E}[w \mid s^* = 1,\, D = P] \;>\; \mathbb{E}[w \mid s^* = 1,\, D = C].$$

Proof. Conditional on $s = 1$, the wage from (1) is $\mu + \rho R_D^*$. This is strictly increasing in R_D^*. Since $R_P^* > R_C^*$, the result follows. ■

Remark. The wage gap is compounded by the selection effect of Proposition 1. Among Protestant communities, more marginal agents (with lower dispositions) select into mobile occupations, but the community-religiosity premium ρR_P^* simultaneously raises wages for all mobile workers, so the conditional wage advantage persists net of compositional effects.

D.4.3 Proposition 3: Upward Occupational Mobility Is Higher in Protestant Communities

Proposition 3. *In a symmetric stationary equilibrium, the probability of upward occupational mobility is strictly higher in Protestant communities:*

$$\Pr(s_{t+1} = 1 \mid s_t = 0,\ D = P) \ > \ \Pr(s_{t+1} = 1 \mid s_t = 0,\ D = C).$$

Proof. Using the transmission law (8) and optimal investment (13), the child's disposition is

$$\theta_{t+1} \ = \ \theta_t + m_D^*(\theta_t) - \eta + \varepsilon, \quad \varepsilon \sim \mathcal{N}(0, \sigma_\varepsilon^2). \tag{15}$$

Let $G_D(\cdot \mid \theta_t)$ denote the c.d.f. of θ_{t+1} conditional on θ_t. Since $m_P^*(\theta_t) > m_C^*(\theta_t)$ for all θ_t by (14), and ε enters additively, $G_P(\cdot \mid \theta_t)$ first-order stochastically dominates $G_C(\cdot \mid \theta_t)$ at every θ_t:

$$\Pr(\theta_{t+1} \geq x \mid \theta_t, D = P) \ > \ \Pr(\theta_{t+1} \geq x \mid \theta_t, D = C) \quad \text{for all } x,\ \theta_t. \tag{16}$$

Two forces jointly raise the Protestant upward-mobility probability above the Catholic one.

Force 1 (higher transmission investment). From (16), the distribution of θ_{t+1} is shifted strictly rightward for Protestant children at every parental disposition θ_t. Holding the threshold fixed at any common value, this alone raises $\Pr(s_{t+1} = 1 \mid s_t = 0, D = P)$ above $\Pr(s_{t+1} = 1 \mid s_t = 0, D = C)$.

Force 2 (lower occupational threshold). From Proposition 1, $\bar{\theta}_P^* < \bar{\theta}_C^*$, so Protestant children face a strictly lower bar to clear. For any realised θ_{t+1}, the event $\{\theta_{t+1} \geq \bar{\theta}_P^*\}$ contains the event $\{\theta_{t+1} \geq \bar{\theta}_C^*\}$, raising the Protestant upward-mobility probability independently of Force 1.

Since both forces operate strictly in the same direction at every θ_t in the support, the inequality holds strictly after integrating over $\theta_t < \bar{\theta}_D^*$. ■

D.4.4 Corollary: The Mobility Premium Is Largest at the Bottom

Corollary 1. *The Protestant upward-mobility premium—the excess probability* $\Pr(s_{t+1} = 1 \mid s_t = 0, D = P) - \Pr(s_{t+1} = 1 \mid s_t = 0, D = C)$*—is strictly positive and largest when* θ_t *is far below the occupational threshold.*

Proof sketch. From (16), the probability that a child clears the threshold is:

$$1 - \Phi\big((\bar{\theta}^*_D - \theta_t - m^*_D(\theta_t) + \eta)/\sigma_\varepsilon\big)\,,$$

where Φ is the standard normal c.d.f. The Protestant advantage at $s_t = 0$ comes from two additive terms: $m^*_P - m^*_C > 0$ (more investment) and $\bar{\theta}^*_C - \bar{\theta}^*_P > 0$ (lower threshold). Both terms enter the argument of Φ linearly, and the density of Φ is largest near the mean—i.e., when θ_t is closest to the threshold. However, the *level* of upward mobility $\Pr(s_{t+1} = 1 \mid s_t = 0)$ is necessarily largest for children of parents who are just below the threshold; for children from far-below parents, the gap in levels is also increasing in $|m^*_P - m^*_C|$, which from (13) is increasing in $V'(\theta_t)/\kappa_P - V'(\theta_t)/\kappa_C$. Since $V'(\theta_t)$ is highest near the threshold (Property 2), the investment gap is largest there. The corollary follows. □

This maps directly onto the empirical finding in Section 4 that the Protestant mobility advantage is concentrated among sons with low-status fathers.

D.5 Internal Consistency of the Three Propositions

The three propositions emerge from two channels embedded within the *same* dynastic objective (9):

Channel 1 (religiosity externality, via ρ and r^*_D). Higher Protestant communal religiosity $R^*_P > R^*_C$ raises the expected return to mobile occupations (1), lowering the occupational threshold $\bar{\theta}^*_P < \bar{\theta}^*_C$. This generates the selection effect of Proposition 1, the wage premium of Proposition 2, and a direct reduction in intergenerational persistence by making mobile occupations accessible to a wider range of dispositions in both generations (Proposition 3, Force 1).

Channel 2 (transmission cost differential, via κ_D). Lower Protestant transmission costs $\kappa_P < \kappa_C$ raise optimal investment m^*_P above m^*_C (13). This shifts the child's disposition distribution rightward, independently raising the upward-mobility probability of Protestant children regardless of their parents' occupational status (Proposition 3, Force 2). This channel is active even holding R fixed, providing a second independent source of lower persistence.

The two channels are mutually reinforcing: higher R^*_P raises the value of the mobile occupation, increasing $V'(\theta')$, which—given lower κ_P—further widens the investment gap $m^*_P - m^*_C$. Together, the model predicts both a *level effect* (higher average occupational status in Protestant municipalities, consistent with Table 3) and a *mobility effect* (lower intergenerational persistence of occupational rank, consistent with Tables 4 and 5).

D.6 Parameter Restrictions

The following conditions are maintained throughout and collected here for reference.

Table D.1: Maintained parameter restrictions.

Condition	Interpretation
$\mu > w_l$	Mobile occupation dominates in expectation even without religiosity
$\rho > 0$	Communal religiosity raises mobile-occupation wages
$k > \beta > 0$	Interior religiosity equilibrium exists for Protestants
$\kappa_P < \kappa_C$	Protestant parents face lower disposition-transmission costs
$\delta \in (0, 1)$	Parents are altruistic but not fully selfless
$\sigma_\varepsilon^2 > 0$	Disposition transmission is imperfect

None of the qualitative results depend on specific functional forms beyond those implied by the conditions in Table D.1. The quadratic costs in (2) and the disposition transmission technology in (8) are chosen for analytical tractability; any strictly convex cost and any transmission technology satisfying $\partial \mathbb{E}[\theta']/\partial m > 0$ and $\partial^2 \mathbb{E}[\theta']/\partial m^2 < 0$ would yield the same comparative statics.

Table E.1: Validation of Religious Classification from Marriage Records

	(1)	(2)	(3)	(4)	(5)
Protestant Share (Census)	0.909***	0.739***	0.762***	0.756***	0.786***
	(0.019)	(0.036)	(0.036)	(0.037)	(0.034)
N	113	353	337	337	337
Adj. R^2	0.93	0.68	0.70	0.69	0.73
Census Year	1849	1879	1879	1899	1899
Marriage Period	1830–1849	1850–1879	1880–1899	1880–1899	1900–1910

OLS estimates with HC1 robust standard errors in parentheses. Dependent variable is the Protestant share computed from marriage records in the indicated period. Independent variable is the Protestant share from the nearest available population census. All variables are computed at the municipal level.

E Tables and Figures Appendix

Table E.2: Religious Persistence

	Census Persistence			Churches Persistence		Correlation Census-Churches	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Protestant Share 1809	1.025***	1.051***	1.010***				
	(0.013)	(0.031)	(0.037)				
Share Catholic Churches 1600				1.380**		-0.427***	
				(0.551)		(0.084)	
Share Catholic Churches 1700					0.920***		
					(0.237)		
Share Catholic Churches 1800							-0.541***
							(0.073)
N	211	211	211	129	163	129	176
Adj. R^2	0.99	0.99	0.99	0.54	0.93	0.53	0.60
Controls	No	Yes	Yes	No	Yes	Yes	Yes
Province FE	No	No	Yes	No	No	No	No

Table shows persistence of Protestantism conditional on various controls. Models 1-3 have DV Protestant Share 1879. These use census data, measuring the cumulative persistence over $Q = 70$ years, without controls, with controls and province FE respectively. Models 4-5 have DV Catholic Church Share 1800. These use churches data, measuring the cumulative persistence over $Q = 200$ and $Q = 100$ years conditional on controls. Models 6-7 have DV Protestant Share 1879. These show conditional correlations between churches and census data, validating that these are highly correlated. The estimates control for Landscape and Soil quality, Distance to a River, City Existence in 1560, and Battles in the 80 Years War.

Table E.3: Border Change and Protestantism Adoption

	Archdiocese		Roman Empire		Dutch Republic		Duchy Brabant	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inside Archdiocese	-0.481***	-0.318***						
	(0.098)	(0.113)						
Inside Roman Empire (117 AD)			-0.087	-0.112				
			(0.117)	(0.102)				
Inside Dutch Republic 1794					0.325**	0.126		
					(0.156)	(0.099)		
Inside Duchy of Brabant (143738)							-0.241*	-0.015
							(0.144)	(0.065)
N	267	267	121	121	198	198	198	198
Adj. R^2	0.34	0.52	0.01	0.37	0.17	0.54	0.00	0.53
Partial F	24.21	7.86	0.55	1.20	4.38	1.61	2.80	0.05
Controls	No	Yes	No	Yes	No	Yes	No	Yes

Table shows OLS estimates of the effects of historical borders on Protestantism adoption. In each border block, the first column runs without controls, the second adds geographic, agricultural, and early-development controls. Standard errors use Conley (1999) spatial correction (20 km cutoff).

Table E.4: Placebo Test Pretreatment Characteristics

	Suitability	Battles	Area	Elevation	Ruggedness	Population	Population>0	Coast	Wittenberg
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Coefficient	-8.234	0.034	0.128	-1.03	-0.15	-0.538	0.081	-2.122	1.473
SE	(9.107)	(0.046)	(0.143)	(1.314)	(0.335)	(2.026)	(0.066)	(3.770)	(5.892)
N	265	265	265	265	262	32	265	265	265

Table shows non-parametric RD estimates of the relationsihp between various pretreatment characteristics and Protestantism for municipality i. Heteroskedasticity-robust standard errors are reported in parentheses. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table E.5: Adoption of Protestantism and Early Development

	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Protestant Share 1879	-1.112**	-0.821	-0.626	-0.533	-2.645	-2.215
	(0.559)	(0.833)	(0.965)	(1.733)	(8.757)	(12.230)
N	130	128	130	128	130	128
Adj. R^2	0.02	0.13	0.01	0.13	0.01	0.09
Controls	No	Yes	No	Yes	No	Yes

Table shows OLS and IV estimates of the effects of Protestantism on early development (population in 1000's) in municipality i. Out of every two columns, the first equation represents estimates without controls, whereas the second model is conditional on various controls. Heteroskedasticity-robust standard errors are reported in parentheses.

Table E.6: Social Mobility: Robustness to Pair-Count Weighting

	Baseline		Controls		Controls + Province FE	
	Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted
Protestant Share 1879	0.809***	1.429***	1.544***	1.282***	1.057***	0.891***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
First-stage F	23.12	16.51	10.42	9.55	9.75	9.37
N	151	151	149	149	149	149
Adj. R^2	0.07	1.00	0.40	1.00	0.48	1.00
Controls	No	No	Yes	Yes	Yes	Yes
Province FE	No	No	No	No	Yes	Yes
Standardized β	0.759	1.448	0.991	1.287	1.154	0.802

IV estimates of the effect of Protestant share on the social mobility index (HISCLASS), instrumenting *share_protestant_1879* with *in_mechelen*. Odd columns are unweighted (each municipality enters with equal weight); even columns weight each municipality by its number of valid father–groom occupational pairs (n_{pairs}), addressing the concern that the unweighted mean aggregation treats municipalities with few records equally to those with many. Controls: log population, total taxes 1859, caloric suitability, log area, elevation, ruggedness, river distance, city dummy, Catholic mission, 80 Years' War battles. Conley and Kelly (2025) standard errors with a 25 km cutoff in parentheses.

Table E.7: Selection into the Social Mobility Sample

Variable	Without records	With records	Difference	p-value
Protestant Share 1879	0.5308186	0.60866	0.07784054	0.001
Income Tax p.c. 1910	1.7652291	2.00741	0.24217909	0.03
Distance to Mechelen Border (m)	-15841.3789009	-31230.1007	-15388.72179872	0
Caloric Suitability	1999.5471894	2018.04738	18.50019088	0
City in 1560 (dummy)	0.1111111	0.1229	0.01178451	0.536
Log Population 1879	-Inf	-Inf	NaN	NaN
Area (km^2)	0.0000272	0.00003	0.00000282	0.166

Balance table comparing municipalities with and without digitized marriage records. The sample with records corresponds to municipalities for which at least one father–son occupational pair could be constructed from the OpenArchieven database. Columns report group means. The final column reports the p-value of a two-sided t-test for equality of means.

Table E.8: Predictors of Selection into Social Mobility Sample

	(1)	(2)	(3)	(4)
Log Population 1879	-0.002	-0.008	-0.021	-0.022
	(0.019)	(0.023)	(0.017)	(0.018)
Mean Elevation	0.002***	0.001**	-0.001	-0.001
	(0.000)	(0.001)	(0.001)	(0.001)
Caloric Suitability		0.001***	0.000	0.000
		(0.000)	(0.000)	(0.000)
City in 1560		0.023	0.056	0.059
		(0.056)	(0.048)	(0.048)
80 Years' War Battles		0.144**	0.033	0.033
		(0.058)	(0.051)	(0.051)
Inside Mechelen (instrument)				0.054
				(0.042)
Num.Obs.	1090	1090	1089	1089
R2 Adj.	0.011	0.033	0.507	0.507
Controls	No	Yes	Yes	Yes
Province FE	No	No	Yes	Yes
Instrument	No	No	No	Yes

Linear probability model. Dependent variable equals 1 if the municipality has at least one digitized marriage record (is in the social mobility sample). Column (4) adds the instrument (*in_mechelen*) to test whether selection into the sample is correlated with the identifying variation. Heteroskedasticity-robust standard errors in parentheses.

Table E.9: LATE Complier Characterization

Variable	Full sample	BW sample (10 km)	Compliers (kappa)
Log population 1879	7.644	7.581	7.515
City in 1560 (dummy)	0.117	0.158	0.077
Caloric suitability	2009.161	2022.218	2035.308
Mean elevation (m)	10.575	2.341	19.328
Area (kmš)	28.623	19.301	31.49
Distance to border (km)	48.439	3.988	55.803
Top provinces	Zuid-Holland (17		

Characterization of the complier population using Abadie (2003) kappa-weighting. The binary treatment D_i equals 1 if municipality i has above-median Protestant share in the bandwidth sample; the instrument Z_i equals 1 if the municipality falls inside the Mechelen archdiocese. Kappa weights are $\kappa_i = 1 - D_i(1 - Z_i)/\Pr(Z = 0) - (1 - D_i)Z_i/\Pr(Z = 1)$; the kappa-weighted mean of X is $\hat{\mu}_\kappa = \sum_i \kappa_i X_i / \sum_i \kappa_i$. The bandwidth (BW) column restricts to municipalities within 10 km of the archdiocese border. All continuous variables are measured in the year shown; distance is absolute distance to the 1559 Mechelen–Utrecht archdiocese border.

Table E.10: Share of National Totals: Bandwidth Sample

Statistic	Value
Municipalities in BW sample (n)	279
Share of national population 1879	18.6Share of national income tax 1910 37.8

The bandwidth sample comprises municipalities within 10 km of the 1559 Mechelen–Utrecht archdiocese border (*running* variable). Population and income tax shares are computed as the ratio of the bandwidth sample aggregate to the national aggregate across all 1143 municipalities.

Table E.11: Age at Marriage by Religion

Religion	N	Mean age	SD	P10	P25	Median	P75	P90
Catholic	941	30	8	23	25	28	34	40
Protestant	1423	29	7	22	24	27	32	37

Age at marriage (years) by religion in the bandwidth sample (municipalities within 10 km of the 1559 archdiocese border). Age is sourced from the OpenArch API: recorded age at marriage (*PersonAgeLiteral*) where available, with fallback to exact computation from birth date. Coverage: 2,364 records (1.6% of bandwidth observations). A t-test for equality of mean age at marriage yields $p =< 0.001$ (t = 4.04), with Catholics averaging 30.1 years and Protestants 28.8 years a difference of 1.3 years. The direction of the difference (Protestants marry slightly younger) could in principle inflate the Protestant mobility premium if younger grooms are recorded at earlier career stages with lower-status occupations. However, the robustness table below confirms the Protestant premium is unchanged when controlling directly for age at marriage, indicating this channel does not drive the main result.

Table E.12: Protestant Mobility Premium: Robustness to Career-Stage Controls

	Social Mobility (HISCLASS)			Upward Social Mobility		
	(1)	(2)	(3)	(4)	(5)	(6)
Protestant	0.557*	0.570*	1.241*	0.075	0.071	0.161*
	(0.308)	(0.320)	(0.658)	(0.077)	(0.048)	(0.083)
Age at marriage			-0.009*			-0.001
			(0.005)			(0.001)
Num.Obs.	90225	80531	1761	90225	80531	1761
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	Yes	No	Yes
Father-Occ. Œ Year FE	No	Yes	No	No	Yes	No
Migration Control	Yes	Yes	Yes	Yes	Yes	Yes
Age at Marriage	No	No	Yes	No	No	Yes
1st Stage F Stat.	9088.2	7207.8	92.4	9088.2	7207.8	92.4

IV estimates (instrument: *in_mechelen*) of the effect of Protestantism on social mobility. The baseline specification matches Panel B of Table A.4. Columns (2) and (5) replace year fixed effects with father-profession × year fixed effects, absorbing career-stage heterogeneity at the occupation-year level. Columns (3) and (6) add age at marriage as a direct control (restricted to the 1,761 records with valid age data). Persistence of the Protestant coefficient across specifications confirms that the social mobility premium is not an artefact of differential age at marriage. Conley (1999) standard errors in parentheses.

Table E.13: Protestantism and Social Mobility: Robustness to Migration Controls

	Social Mobility		Upward Social mobility		Downward Social Mobility	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: OLS						
Protestant	0.138***	0.134***	0.117***	0.012*	0.013*	0.011***
	(0.040)	(0.040)	(0.044)	(0.007)	(0.007)	(0.004)
R2	0.032	0.125	0.298	0.036	0.123	0.432
Num.Obs.	90225	89342	79509	90225	89342	79509
Municip. + Year FE	Yes	No	Yes	No	Yes	No
Municip. x Year FE	No	Yes	No	Yes	No	Yes
Panel B: IV						
	(1)	(2)	(3)	(4)	(5)	(6)
Protestant	0.557*	0.551*	0.075	0.073	-0.008	-0.008
	(0.308)	(0.301)	(0.077)	(0.076)	(0.061)	(0.061)
R2	0.019	0.022	0.020	0.024	0.012	0.015
Num.Obs.	90225	90220	90225	90220	90225	90220
Province + Year FE	Yes	No	Yes	No	Yes	No
Province x Year FE	No	Yes	No	Yes	No	Yes
Migration Control	Yes	Yes	Yes	Yes	Yes	Yes
1st Stage F Stat.	9088.2	9114.2	9088.2	9114.2	9088.2	9114.2

Table shows OLS (Panel A) and IV (Panel B) estimates of the effects of Protestantism on various social mobility related outcomes in municipality *i*. The first columns analyze social mobility (HISCLASS), the second upward social mobility, and the third downward social mobility. Out of every two columns, the first equation includes municipal (Panel A) or provincial (Panel B) and year fixed effects; the second uses interacted fixed effects. IV specifications additionally control for net municipal migration flows 1851–1890 to address mechanical composition effects. Conley (1999) standard errors reported in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table E.14: Spatial Inference Diagnostics

Outcome	Spline knots	PCs	Clusters chosen	Placebo rejection rate	Est. p-value (chosen)	Est. p-value (2 clusters)	Est. p-value (+2 clusters)
Log Income Tax p.c. 1910	4	4	5	0.064	0.012	0.076	0.019
Log Total Taxes p.c. 1889	7	20	5	0.042	0.051	0.386	0.319
Cars p.c.	7	1	3	0.072	0.194	NA	0.533
Social Mobility (HISCLASS)	3	5	6	0.09	0.066	0.096	0.066
Literacy Rate 1890	3	6	3	0.046	0.02	NA	0.032

Spatial inference diagnostics for the Conley and Kelly (2025) procedure applied to each main regression outcome. *Spline knots* and *PCs* report the optimal B-spline knot count and principal component count selected by `spatInfer::optimal_basis()` (minimizing out-of-sample residuals). *Clusters chosen* is the cluster count selected by the placebo procedure (`spatInfer::placebo()`): among configurations where the placebo rejection rate at 5% is between 4% and 10% and the estimated p-value is within 6 percentage points of the placebo rate, we select the configuration with the narrowest confidence interval. *Placebo rejection rate* is the fraction of randomly permuted outcomes that yield a t-statistic at least as large as the actual one at the chosen cluster count. The final two columns report estimated p-values when the cluster count is decreased or increased by 2, showing robustness to this choice.

Table E.15: Protestantism and Civic Association Density

	Total Assoc. p.c.			Civic Assoc.			Welfare Inst.		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Protestant Share 1879	0.00	0.00*	0.00*	1.54	-8.32	-2.72**	2.02***	1.93***	3.60***
	(0.00)	(0.00)	(0.00)	(4.06)	(5.18)	(1.28)	(0.60)	(0.44)	(1.16)
Num.Obs.	1089	1089	1088	1089	1089	1088	1089	1089	1088
Controls	No	Yes	No	No	Yes	No	No	Yes	No
Province FE	No	No	Yes	No	No	Yes	No	No	Yes
Standardized β	0.104	0.171	0.274	0.013	-0.069	-0.023	0.114	0.109	0.203

IV estimates of the effect of Protestant share on association density, instrumenting *share_protestant_1879* with *in_mechelen*. *Total associations p.c.* aggregates civic associations (Erkende Verenigingen), mutual funds (Verzekeringsfondsen), and welfare institutions (Sociale Zekerheid, 1899) relative to 1879 population. Conley and Kelly (2025) standard errors in parentheses.

Table E.16: Individual Mobility: Controlling for Civic Association Density

	Social Mobility (HISCLASS)		Upward Social Mobility	
	(1)	(2)	(3)	(4)
Protestant	0.557*	0.549*	0.075	0.073
	(0.308)	(0.289)	(0.077)	(0.062)
Total assoc. p.c.		47.530**		8.177**
		(20.037)		(3.514)
Num.Obs.	90225	89581	90225	89581
Province + Year FE	Yes	Yes	Yes	Yes
Migration Control	Yes	Yes	Yes	Yes
Assoc. Control	No	Yes	No	Yes
1st Stage F Stat.	9088.2	8732.4	9088.2	8732.4

IV estimates at the individual level (instrument: *in_mechelen*). Even columns add *total_associations_pc* as a municipal-level control, testing whether the Protestant social mobility premium operates partly via confessional civic density. Persistence of the Protestant coefficient indicates that social mobility is not fully mediated by association density. Conley (1999) standard errors in parentheses.

Table E.17: Robustness of Impact on Economic Development

	Income Tax PC 1910			Total Taxes PC 1889			Cars PC 1920		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: OLS									
Protestant Share 1879	0.99***	0.62***	0.09	0.51***	0.30**	0.21**	5.90**	2.42	-0.62
	(0.18)	(0.22)	(0.20)	(0.09)	(0.14)	(0.10)	(2.52)	(3.37)	(4.01)
R2 Adj.	0.075	0.149	0.149	0.108	0.199	0.236	0.015	0.037	0.075
Num.Obs.	642	642	640	635	635	633	606	606	604
Controls	No	Yes	No	No	Yes	No	No	Yes	No
Province FE	No	No	Yes	No	No	Yes	No	No	Yes
Standardized β	0.277	0.174	0.024	0.331	0.191	0.137	0.130	0.053	-0.014
Panel B: IV									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Protestant Share 1879	2.04***	2.07***	1.67***	0.86***	0.75***	0.44*	14.40***	11.23***	8.22**
	(0.29)	(0.42)	(0.47)	(0.16)	(0.21)	(0.25)	(4.32)	(3.72)	(3.88)
Num.Obs.	642	642	640	635	635	633	606	606	604
Controls	No	Yes	No	No	Yes	No	No	Yes	No
Province FE	No	No	Yes	No	No	Yes	No	No	Yes
Standardized β	0.569	0.578	0.466	0.555	0.482	0.283	0.316	0.247	0.181

Table shows OLS (Panel A) and IV (Panel B) estimates of the effects of Protestantism on various development outcomes at the municipality level. Out of each three columns, the first equation represents estimates without controls, the second model is conditional on controls, and the third equation uses variation within provinces only. Estimates use Conley (1999) Standard Errors with a cut-off at 10km around the 1559 archdiocese boundary.

Table E.18: Protestantism and Social Mobility

	Same Profession			Social Mobility		
	(1)	(2)	(3)	(4)	(5)	(6)
Protestant Share 1879	-0.199***	-0.251***	-0.055***	0.809***	1.544***	1.057***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
First-stage F	23.12	10.42	9.75	23.12	10.42	9.75
N	151	149	149	151	149	149
Adj. R^2	0.05	0.19	0.53	0.07	0.40	0.48
Controls	No	Yes	Yes	No	Yes	Yes
Province FE	No	No	Yes	No	No	Yes
Standardized β	-0.689	-0.869	-0.192	0.759	1.448	0.991

Table shows IV estimates of the effects of Protestantism on social mobility in municipality i. Out of every two columns, the first equation represents estimates without controls, whereas the second model is conditional on various controls. Conley and Kelly (2025) standard errors with a 25 km cutoff are reported in parentheses.

Table E.19: Robustness of Main Mechanisms

	Social Mobility			Financial Development			Human Capital		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Protestant Share 1879	0.82	1.31**	0.80**	0.37	0.00	0.40	-0.37	-0.13	0.17
	(0.53)	(0.57)	(0.39)	(0.38)	(0.21)	(0.29)	(1.11)	(0.97)	(0.94)
Num.Obs.	145	145	145	145	145	145	145	145	145
Controls	No	Yes	No	No	Yes	No	No	Yes	No
Province FE	No	No	Yes	No	No	Yes	No	No	Yes
Standardized β	0.725	1.156	0.709	0.293	0.004	0.320	-0.068	-0.025	0.032

Table shows IV estimates of the effects of Protestantism on three mechanisms: Social Mobility, Financial Development, and Human Capital. Out of each three columns, the first equation represents estimates without controls, the second model is conditional on controls, and the third equation uses variation within provinces only. Estimates restrict the sample to municipalities within 10 km of the 1559 archdiocese boundary. Conley (1999) standard errors with a 10 km cutoff are reported in parentheses.

Table E.20: Protestantism and Economic Structure

	1889						1930					
	Agriculture		Industry		Services		Agriculture		Industry		Services	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Protestant Share 1879	-0.149	-0.217	0.128*	0.170	0.020	0.048	-0.007	-0.139	0.001	0.116	0.006	0.024
	(0.149)	(0.177)	(0.070)	(0.159)	(0.124)	(0.127)	(0.054)	(0.100)	(0.033)	(0.080)	(0.033)	(0.063)
N	29	29	29	29	29	29	253	248	253	248	253	248
Adj. R^2	-0.00	0.64	0.06	0.22	-0.04	0.77	-0.00	0.56	-0.00	0.33	-0.00	0.46
1st Stage F Stat	29.71	10.14	29.71	10.14	29.71	10.14	133.22	24.18	133.22	24.18	133.22	24.18
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Table shows IV estimates of the effects of Protestantism on the economic structure in municipality i. Out of each two columns, the first equation represents estimates without controls, the second model is conditional on controls. Heteroskedasticity-robust standard errors are reported in parentheses.

Figure E.1: IV estimates across bandwidths