THE ECONOMIC JOURNAL

The Economic Journal, **126** (*June*), 821–860. Doi: 10.1111/ecoj.12193 © 2014 Royal Economic Society. Published by John Wiley & Sons, 9600 Garsington Road, Oxford OX4 2DQ, UK and 350 Main Street, Malden, MA 02148, USA.

WHY DID THE NETHERLANDS DEVELOP SO EARLY? THE LEGACY OF THE BRETHREN OF THE COMMON LIFE*

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This research establishes a link between the Brethren of the Common Life (BCL), a religious community founded by Geert Groote in Deventer in the late fourteenth century, and the early economic development of the Netherlands. The BCL stimulated human capital accumulation. The historical analyses show that the BCL contributed to the high rates of literacy, to the high level of book production and to city growth in the Netherlands. These findings are supported by a set of OLS regressions and further corroborated by 2SLS estimates that use distance from Deventer as an instrument for the presence of the BCL.

> 'Nowhere else does one find a greater number of people of average education.'
>
> *Desiderius Erasmus* (cited in Cipolla, 1969, p. 47)

> Spanish visitors ... noted the widespread literacy in the Netherlands. One of Prince Philip's entourage, Vicente Alvarez, noted in his journal that 'almost everyone' knew how to read and write, even women
>
> *From the notes of Philip's visit to the Netherlands in 1549* (Parker, 1977, p. 21)

The Dutch Republic became an important economic power after a successful revolt against the Habsburg rulers in the late sixteenth century (Israel, 1995). This successful development has for a large part been attributed to trade via the Atlantic Ocean and the emergence of political institutions that provided secure property rights to broader segments of society (Acemoglu *et al.*, 2005). However, the early developments that led to these modern institutions and the rise of the Dutch Republic are not well understood. For instance, the levels of literacy were almost two times those of Germany at the end of the sixteenth century. These high levels of literacy in the Netherlands have also been documented by early visitors – as the quotes above suggest – and found in historical research.[1] In addition, the period 1300–1500 has been labelled as a period

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We thank two anonymous referees and the editor of this JOURNAL for their feedback and help to improve and tighten the analysis in the article. In addition, we are grateful to Daron Acemoglu, Joshua Angrist, Lex Borghans, Maarten Bosker, Raouf Boucekkine, Robin Cowan, David de la Croix, Casper van Ewijk, Oded Galor, Anne Gielen, Edward Glaeser, Claudia Goldin, Joop Hartog, Douglas Irwin, Rahmi Ilkilic, Frank Kleijbergen, Meir Kohn, Erzo F.P. Luttmer, Stelios Michalopoulos, Nathan Nunn, Christopher Palmer, Nina Pavcnik, Ton van Schaik, Jon Skinner, Doug Staiger, Coen Teulings, David Weil and Jan Luiten van Zanden for helpful comments and conversations that helped shape the idea and analyses. Seminar participants at Brown, CPB, Dartmouth, Erasmus, Louvain-la-Neuve, Maastricht, MIT and Utrecht are also gratefully acknowledged for their useful feedback. Jelte Haagsma provided excellent research assistance. Finally, we thank Erika Kuijpers, Kees Mandemakers, Marco Mostert, Ad Notten, Nico Rasters and Martijn Smit for help with the obtaining the data and for historical information about the late medieval period in Northern Europe.

[1] See e.g., Cipolla (1969), Parker (1977), Baten and Van Zanden (2008) and Buringh and Van Zanden (2009).

of crisis in Europe but not for the Netherlands (De Vries and Van der Woude, 1997). While the surrounding regions – such as the Rhineland and Flanders, with cities such as Cologne, Ghent and Bruges – flourished already around 1300, modern structures emerged in the Dutch economy from the end of that century onwards. The result was rapid urbanisation, industrialisation of production in cities (e.g. textile production, brewing and shipbuilding) and rural areas (e.g. brick production). Eventually, it led to a revolt against the Habsburg rulers (1572) and the formation of the Dutch Republic (1588). This marked the start of the Dutch Golden Age, which ended with William III's death in 1702 (Israel, 1995).

The first episode of Dutch development in the period of 1350 up to the revolt is not well understood. The process of early economic and societal development was different in nature from the development that took place after the formation of the Dutch Republic. This article establishes that the origin of the early modern structures can be linked to the Brethren of the Common Life (BCL), a religious community that stimulated the accumulation of human capital and provided the intellectual foundation for Christian Humanism in Europe. We develop a mechanism that explains the fundamental role of the BCL in the origin of the rise of the Netherlands and provide historical and empirical evidence consistent with our mechanism.

Our mechanism to explain early economic and societal development in the Netherlands can be summarised as follows. The BCL were a religious community founded by Geert Groote (1340–1384) in the city of Deventer in 1374. Groote was dissatisfied with the moral decline in the Roman Catholic Church. He believed that religion was a personal matter. Therefore, religious people should be able to read the Bible, other religious books and collections of sermons. He founded the BCL within the Church to start an inside reform. He was not motivated by a desire to increase prosperity or to change society.

The BCL stimulated the accumulation of human capital among civilian people through vernacular (religious) texts, schools and book production. This increased literacy rates: by 1600 literacy rates in the Netherlands were substantially higher compared to surrounding regions. At the same time, economic activity was stimulated by this early literacy, which led to a rise of economic development. Finally, the BCL followed a socially inclusive approach when educating citizens. They operated within the Roman Catholic Church but emphasised people's own responsibility for making a living. This way, the BCL laid the intellectual foundation for Christian Humanism, which is considered one of the most profound cultural changes in Western history.[2] The early development and diffusion of Christian Humanism in the Netherlands provoked severe repression by the Habsburg rulers. This repression seems to be the most fundamental factor for the Dutch Revolt.[3]

To empirically establish a link between the BCL and the early development of the Netherlands, we focus on a number of early economic and societal outcomes.

[2] Blockmans (1993) and Israel (1995) provide an overview of the development of Christian Humanism in Europe. In Section 1, we elaborate the link between the BCL and Christian Humanism.

[3] Israel (1995) labels the violent repression as a mental civil war of the Habsburg Rulers against Dutch citizens. In an earlier version of this article, we also present empirical evidence for a link between the BCL and the Dutch Revolt (Akçomak *et al.*, 2013).

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We analyse the impact of the BCL by focusing on differences across a sample of Dutch cities in the late medieval period and early Renaissance. First, we study the impact on two indicators of human capital: literacy rates and book production. We examine whether the early high rates of literacy in the Netherlands are associated with the BCL. The data on literacy rates at the end of the sixteenth century come from the Amsterdam archives and are among the oldest micro-level data that enable a unique assessment of local differences in literacy in the Netherlands in the period 1580–1800 (Cipolla, 1969; Hart, 1976).[4] We investigate the relationship between the presence of the BCL and local differences in literacy rates in 1600. In addition, we examine the relationship between the BCL and book production at the city-level in the period 1470–1500, which is the period immediately after the invention of the movable type printing press in Mainz. Second, we study the impact of the BCL on economic prosperity by investigating the relationship between the BCL and city growth (1400–1560).

To document the association between the BCL and economic and societal outcomes in the fifteenth and sixteenth century we use OLS estimators. We then attempt to establish a causal relationship between the BCL and these outcomes by using instrumental variables techniques. The instrument we use is the distance from Deventer, the city where Groote founded the BCL. Our estimates suggest a positive relationship between the BCL and the accumulation of human capital at the city level. Literacy rates and book production are higher in cities where the BCL were present. In addition, we find that cities in which the BCL were active have experienced stronger population growth in the period 1400–1560. All associations are robust for various specifications and the inclusion of other religious movements and monastic orders in this period. We also find evidence that these associations can be considered as causal relationships.

We address the robustness of our results in several ways. First, we investigate whether our instrument is independent of pre-1400 factors, such as the presence of schools, city growth before 1400, the presence of other religious orders or trade. We find no effect of these possible early factors, except for Hanseatic trade. This dummy variable yields a statistical concern for the use of our instrument but additional analysis and historical accounts show that this factor does not bias the results. Second, a placebo test, in which we use distance to other important cities of that time as instruments, does not establish a consistent link between the BCL and outcomes. Third, we extend the geographical area beyond the Netherlands by adding information about cities in Belgium and Germany and obtain estimates that suggest a causal link between city growth and BCL presence. Finally, we find that economic developments during and after the Dutch Golden Age are of a different nature (Acemoglu *et al.*, 2005). There is no significant relationship between the BCL and economic development after 1600. This is consistent with the interdiction imposed

[4] The Amsterdam archives are unique in the sense that they are the largest and earliest source of direct information about literacy of men and women known. A number of French departments have also collected literacy data in the same way, but they are only available in terms of percentages and from the 1680s onwards. Other sources are often based on military registers and cover only men. These latter sources start in the nineteenth century (Cipolla, 1969, pp. 20–2).

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on all religious communities – including the BCL – that did not adopt monastic rules by Pius V in 1568. In the Netherlands, this co-incided with the Revolt and the Reformation (Slechte, 2010).

Hence, we conclude that the BCL influenced the economic and societal jump start of the Netherlands in the period 1375 up to about 1588. It should be noted that we do not claim that the BCL is the only factor that determined the successful transformations of Dutch society. The success of BCL should be interpreted in the context of a society in which industrialisation, trade and urbanisation took off and in which the demand for human capital increased. The BCL was important for the supply of human capital and was able to reduce bottlenecks in human capital formation by educating ordinary citizens and institutionalising education. As such, the BCL speeded up the production of human capital and the growth of the cities.

Our work contributes to the literature in economics. We demonstrate empirically the impact of religious orders on early economic development. Recent work by Becker and Woessmann (2009) and Cantoni (2012) examines the impact of the Reformation of 1517 and the subsequent rise of Protestantism on economic development, while Cantoni and Yuchtman (2014) test whether medieval universities played a role in fostering economic activity.[5] Becker and Woessmann find that Protestantism led to higher prosperity in Prussia through increased literacy rates. Cantoni finds no effects of Protestantism on economic development in European cities. Like Becker and Woessmann, we emphasise the channel of human capital accumulation but the BCL started 150 years before the Reformation. This offers an explanation for the jump start of the Netherlands. Both Becker and Woessmann, and Cantoni analyse the effects up to 1900 but, as Cantoni shows, it is challenging to explain almost 400 years of European history by the direct effects of the Reformation. We are able to document the early effects of the BCL on economic development leading to economic and societal change in a period of about 200 years. Research by Barnebeck Andersen *et al.* (2013) examines the impact of the Cistercians on economic development in England in the period 1377–1801. The Cistercians did not emphasise the accumulation of human capital, like the BCL did. Rather, they stressed the importance of hard work and thrift. This led to a return to hard manual labour and the restraint from consumption. It is argued that this induced cultural change, which subsequently took hold in the population of England. These new values in turn stimulated growth. We emphasise the direct effect of the BCL on human capital accumulation and find no effects of Cistercians or other religious orders on the economic development of the Netherlands. Botticini and Eckstein (2007) study the transformation of Judaism at the beginning of the first millennium and find that this is driven by preferences, which is consistent with Geert Groote's initial motivation. Finally, Glaeser and Glendon (1998), Barro and McCleary (2005) and McCleary and Barro (2006) find a role for religious beliefs in explaining economic development, which is consistent with our mechanism of human capital investment decisions enhancing economic performance.

[5] Cantoni and Yuchtman (2014) show that the foundation of universities in Germany expanded economic activity. This is consistent with our findings relating the BCL to economic development in the Netherlands.

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The channel of economic development through human capital accumulation is also emphasised by Galor and Weil (1999), Galor and Moav (2006) and Boucekkine *et al.* (2007) and summarised by Galor (2010, 2011). These papers use early human capital accumulation as an engine for economic growth. They argue that the process of capital accumulation intensified the importance of skilled labour and generated an incentive for investment in human capital. It is also consistent with the emphasis on human capital accumulation as a driver for economic growth put forward by Goldin and Katz (1998, 2008).[6] Another channel of development is technological advancement. Dittmar (2011) shows that cities that adopted the printing press earlier grew faster. The key mechanism is these cities benefited from human capital spillovers and technological change.[7] Our mechanism is consistent with this evidence but shows that human capital development around Deventer started almost a century earlier. At first, the BCL copied books by more primitive means, which was an important way to make a living.

Finally, we provide a mechanism relevant for economic history in the period 1375–1588. Our episodic mechanism is consistent with previous findings for this early period (De Vries, 1984; Blom and Lamberts, 1993; Israel, 1995; De Vries and Van der Woude, 1997; Van Bavel and Van Zanden, 2004; Acemoglu *et al.*, 2005). Slechte (2010) provides a historical record of Deventer as a major town for religion (the cradle of Modern Devotion), economic activity and trade in the fifteenth and sixteenth century. He also emphasises from a historical point of view the key role of Geert Groote in establishing Deventer as an important late medieval city.

The article proceeds as follows. In the next Section, the mechanism of how the BCL has influenced economic outcomes is explained. Section 2 presents the empirical strategy and the data. In Section 3, the main results are documented. Section 4 shows robustness checks and discusses possible alternative explanations. Section 5 concludes.

1. The Mechanism

Our hypothesis is that the BCL, by fostering human capital formation, contributed to the early development of the Netherlands. The establishment of the BCL in Dutch cities promoted literacy among citizens by institutionalising the educational system, by promoting an intense personal relationship with God through reading the Bible and other religious texts in vernacular, by stimulating a mixed life including both spiritual and economic self-maintenance and by the production of books as a form of manual labour to make a living in their houses. This way of promoting human capital formation contributed to early economic development because cities in which the BCL established houses and educated citizens grew faster relative to cities in which the BCL was absent.

[6] Van Bavel (2002) and Van Bavel and Van Zanden (2004) present evidence of high wages in the Netherlands from 1400 onwards. They argue that early industrialisation, as a result of a shortage of arable land, increased the demand for human capital. This seems to be evidence in favour of the mechanisms developed by Galor and Moav (2006).

[7] Baten and Van Zanden (2008) and Buringh and Van Zanden (2009) point at similar mechanisms.

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The mechanism that links the BCL to the early development of the Netherlands can be outlined in four steps related to: the context; the approach; the accumulation of human capital and economic development:

(*i*) the BCL were established and diffused in a turbulent economic, social and institutional context of the late fourteenth and fifteenth century;
(*ii*) the BCL managed to accumulate human capital among citizens without inducing animosity from the Roman Catholic Church or political rulers;
(*iii*) the BCL built human capital by institutionalising education, providing education for all and taking care of people; and
(*iv*) human capital accumulated through the BCL had an impact on the structure of economic activity.

Together, these four steps yield our main mechanism and predictions for empirical research.

1.1. *The Late Medieval Period in the Netherlands*

Before 1400 the Netherlands was a frontier country with features of a newly reclaimed region. Farmers were allowed to occupy the area and received freedom and property rights. As a result, the Netherlands was characterised by medium-sized family farms worked by free peasant owners. In contrast to most other parts of Europe, feudal structures were relatively lax and the position of the nobility was weak. Compared to surrounding regions, the occupation of the area was relatively late and cities were small.[8]

The economic and political context of the late fourteenth and fifteenth century were a turbulent period in Europe. Population growth came to a stop. There were signs of overpopulation, food became expensive and parts of Europe were famine-stricken. Political conflicts, pre-carious political balances and the plague worsened the situation (De Vries, 1976; De Vries and Van der Woude, 1997). By the end of the fourteenth century, the Netherlands could not be regarded as a united country. Citizens identified themselves with the cities and villages they lived in and not so much with the authority exercised by the several dynasties, such as the Duchy of Burgundy or Bavaria, or more local ones, such as the Duchy of Guelders, the counties of Brabant, Holland or the Bishopric of Utrecht (Blockmans, 1993). The northern provinces of the Netherlands were more or less independent and only mildly affected by the authority of the Holy Roman Empire. This changed in the sixteenth century when the Habsburg rulers became worried about the social unrest in the north.

Important for understanding the head start of the economy are difficulties in arable farming, which forced people to find other sources of income. This led to industrialisation of both urban and rural areas as early as the fifteenth century. The rapid development of urban industries (e.g. textile production, brewing and

[8] In a number of publications, Sokoloff and Engerman hypothesise that differences in development of institutions in the New World colonies are related to differences in their natural environment (Sokoloff and Engerman, 2000 for an overview). The early development of the Netherlands seems consistent with their hypothesis.

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shipbuilding) and a rise in non-agricultural activities in the countryside (e.g. brick production) are well documented; see Van Bavel and Van Zanden (2004) for an overview.[9] Together with the modest population decline and high fertility rates in the fifteenth century, labour was abundant. This gave an additional boost to industrial production and increased urbanisation. It also increased trade with Dutch bricks being exported to England, Denmark and the Baltic; beer and textiles were exported to Flanders and Brabant.

This context of industrialisation, trade and urbanisation is important for the success of the BCL because it created a growing demand for human capital. Weak institutions and the existing structure of property rights provided an incentive structure that promoted human capital development. In this context, human capital supply was a bottleneck for the development of Dutch society. The BCL, which was based on religious motives, generated a new supply of human capital that might have been important for mitigating this bottleneck. In particular, the institutionalisation of education and the 'education for all' philosophy stimulated an increase in human capital at a point in time at which Dutch society was in need of human capital. This 'lucky' coincidence of changes in demand and supply of human capital was important for the impact of the BCL on the long-term economic and societal development of the Netherlands.

1.2. *The Foundation, Approach and Diffusion of the BCL*

Geert Groote (1340–84) was the founder of the BCL, which has been put under the umbrella of Modern Devotion. Groote was a descendant of a rich family living in Deventer. He was uninterested in running the family business and decided to devote his life to religion.

1.2.1. *Foundation and approach*

After he survived a serious disease, he established the *Meester-Geerthuis* in his native Deventer in 1374 as a semi-religious house in which religious communities found a home and in which care for the poor was provided (King, 1992; Slechte, 2010). This house was at first mainly occupied by poor women who were offered shelter (King, 1992). His missionary travels focused on the importance of a personal spiritual life, which was achievable by all. He had preached in almost all big cities in the Netherlands by 1380 (Hyma, 1950, p. 20). He also assisted in setting up houses in other cities by providing financial means. Groote believed that individuals should try to fulfil the apostolic command to poverty and chastity and to live virtuous lives in which they made their own choices. The novelty of his approach was to serve the community and the freedom to choose. This view on religion and personal life was different from the view of the rulers of the Church, who viewed God as a rational governing principle with no influence of individuals on life outcomes (Post, 1968, p. 25).

[9] See e.g., Kaptein (1998) for research on the Dutch textile industry from 1350 onwards, Unger (2001) for a history of brewing and Unger (1978) for an analysis of shipbuilding.

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Groote's efforts were stimulated by dissatisfaction with the moral decline in the Roman Catholic Church.[10] The reform that the BCL pursued was to return to the customs of the early Christians. It is crucial to stress that this took place within the Roman Catholic Church. This is different from the Reformation of 1517. Martin Luther stepped out of the Roman Catholic Church, which started Protestantism in Europe. Groote aimed at a reform from within. To achieve this, he translated parts of the Bible into Dutch, with additional explanatory notes. In his writings, he gave special emphasis to the use of vernacular so that all citizens could understand the messages for a virtuous life presented in the Bible. At the time there were more people dissatisfied with the moral decline in the Church but they were accused of heresy and often put to death. That is why he and Florens Radewijns travelled to Utrecht to get the BCL recognised by the bishop (Slechte, 2010). Utrecht was the religious centre of the Netherlands, with the bishop in charge of the religious community. In 1398, bishop Frederik van Blankenheim agreed with the organisation and religious motives of the BCL. This put the movement under ecclesiastical jurisdiction and took away the fear of becoming accused of heresy. Also the fact that Utrecht hosted four BCL houses is consistent with the fact that the BCL was accepted within the Church (see Figure A1 in the online Appendix). In addition, Groote advised his successor Florens Radewijns to set up monasteries next to houses. This also helped to reduce rumours of heresy to silence.

In the late fourteenth and fifteenth century, more houses were established in Deventer and also in other cities. Figure 1 shows the 35 cities with BCL houses in the Netherlands. The 23 dark grey dots are large cities with BCL houses; the 12 light grey dots are small cities. Large means 1,000 or more inhabitants in 1400. There are 67 cities with these features in the Netherlands in 1400. We use these 67 cities for our empirical analysis in Section 3. The 44 white dots are the large cities without BCL houses. Figure A1 in the online Appendix provides a map of all BCL cities.

The BCL had a unique character and organisation, which differ from other forms of establishments and monasteries of that time in several ways. First of all, no vows were taken as used to be the case in other religious movements. Members enjoyed a mixed life balancing daily and religious activities. This mixed-life philosophy encouraged members to become influential in society (e.g. Erasmus) and to support the BCL arguments on education and monastic reform beyond the range of influence of the Church (e.g. Luther). Second, the form of manual work conducted in the BCL houses was translating, copying and printing books. These books were sold to make a living. This was exceptional because all other religious organisations and monasteries of that time engaged in agriculture as manual work. After the invention of the printing press around 1450 in Mainz, more brothers became engaged in printing and teaching activities.[11] The organisation of production in the houses became specialised with some members becoming illustrators, others specialising in developing ornamental letters

[10] The motive force was at first primarily religious: 'to return to a simple New Testament life, and to rest faith in a vernacular Bible accessible to all' (Laurie, 1896, p. 143). This religious motive becomes also clear from King's description of the daily life in the first BCL house in Deventer (King, 1992).

[11] The diffusion of the printing press in Europe starts in Mainz around 1450. Johannes Gutenberg invented the printing press in Europe (Baten and Van Zanden, 2008; Dittmar, 2011).

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Fig. 1. *Sample of Cities*

Notes. Dark grey dots are the Brethren of the Common Life (BCL) cities with 1,000 or more inhabitants in 1400. These are used in the empirical analyses. Light grey dots are small BCL cities for which no further information is available. White dots are the other large cities in the Netherlands in 1400. $n = 67$, with 23 large BCL cities, 12 small BCL cities and 44 large non-BCL cities. See subsection A.2.3 of the online Appendix for more details.

and so on. Finally, the BCL developed literacy as a tool to achieve reform within the Church and society. The goal of educating citizens increased the supply of educated people who could read the Bible and for other work about the Church and societal habits. The lively civilian life in Dutch cities in the late medieval period with public plays being performed seems to be a cause of the attitude towards central authority induced by literacy. In addition, citizens could also write contracts to trade. This impact of early literacy is what set the BCL apart from other religious movements of that time.

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We view Geert Groote's ideas as a reaction to the moral decline of the religious traditions.[12] The new ideas were not motivated by a desire to increase prosperity, literacy or revolt. Groote thought that religion was a personal matter. Therefore, one should be able to read the Bible, other religious texts and collections of sermons. This idea about religion led to a direct effect on literacy. It increased the demand for books because more people became literate. At the same time, the supply went up because of the unique form of manual labour in the BCL houses.

1.2.2. *Diffusion of ideas*

The BCL formed the Modern Devotion movement around the city of Deventer. The movement was managed from Deventer. The first houses were set up in Deventer and in Zwolle. Houses from Deventer sent missionaries to Amersfoort (1395), Delft (1403) and Muenster. Houses in Zwolle were influential in the founding of houses in Albergen (1406), Hulsbergen (1407), 's-Hertogenbosch (1424), Doesburg (1426), Groningen (1430) and Harderwijck (1441). The people living in the house in Delft established one in Gouda (1445) and Utrecht (1474). The people of 's-Hertogenbosch founded a BCL house in Nijmegen (1469). Most of the houses in Germany were founded by the missionaries from the Muenster and Cologne houses. And most of the rectors of the houses came from the houses in Deventer and Zwolle. Hence, it could be argued that the human capital was created in Deventer and Zwolle and diffused to other BCL houses across the region.

The historical literature provides information about the number of people who lived in BCL houses. Brother houses seem to have been smaller than sister houses. Brother houses in Zwolle contained approximately 10–15 priests, clergymen and laymen (Van Beek, 2009). Post (1968) reports about a Zwolle fraternity-house containing 35 persons. The Meester-Geerthuis in Deventer started with 16 sisters, which grew to approximately 150 sisters in 1419. In addition, in 1400, there were four new sister houses in Deventer. In other Dutch cities, such as Amsterdam, 's-Hertogenbosch, Utrecht, Zutphen and Zwolle, the sister houses reached a similar size (Post, 1968, p. 269; Koorn, 1992, pp. 107–14; Scheepsma, 1997, p. 17). The sister house in 's-Hertogenbosch contained 500 sisters and a new house was built in Vught in which about 200 sisters lived. These numbers are significant considering the relative small city sizes of that time (e.g. Table 3). Estimates of the total numbers confirm this picture. The total number of female clergy at the start of the Reformation has been estimated around 10,000 individuals. Approximately 8,000 of these persons were affiliated with the BCL (Post, 1954, pp. 160–67). The numbers for the fifteenth century are likely to have been of a similar magnitude (Scheepsma, 1997, p. 23).

One important way to influence ordinary citizens to live a common life was by organising weekly meetings. These meetings were held immediately after the divine services and can be seen as Sunday schools. During these meetings, edifying readings and sermons were discussed under supervision of a senior member of the BCL. Next to

[12] This seems similar to the transformation of Judaism at the beginning of the first millennium. Botticini and Eckstein (2007) argue that this transformation originated from a change in religious preferences. It was not motivated by economic incentives.

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delivering a sermon the BCL also stored collections of sermons in the libraries of the houses (Lem, 1991; Mertens, 1996). The primary reason for writing down the orally delivered speeches was religious. Only when the listeners would write down the words, would the content of the sermon be truly preserved (Kienzle, 2000). These sermons were written in vernacular and people exchanged these texts to study how they should live a common life. The historical literature shows that BCL houses are known for organising these meetings; particularly the houses in Delft, Deventer, Gouda, Utrecht and Zwolle (Lem, 1991; Scheepsma, 1997, ch. 3).

Towards the end of the fifteenth century, the BCL allied closely with humanists, which further increased societal impact (Laurie, 1896; Hyma, 1951).[13] The influence of the BCL on Christian humanism can be seen from the similarity of ideas and from networks of influential persons. Christian humanism started to gain influence between 1470 and 1490 in the cities of the north-eastern parts of the Netherlands (Deventer, Zwolle, Kampen and Groningen).[14] It was a blend of Italian humanistic science and Christian ideals, fostered by the tradition of the BCL. The ideas about personalising religion from Thomas à Kempis' book *The Imitation of Christ* are fundamental for the *Philosophia Christi* of Rudolf Agricola and *In Praise of Folly* of Desiderius Erasmus but also for the leading thinkers of the Reformation from 1517 onwards. Wessel Gansfort (1419–89), one of the leading Modern Devotion representatives, worked in Zwolle, Deventer and Groningen. His work is known to have had a direct influence on Martin Luther's thinking. Agricola, who is considered to be the founding father of humanism in Northern Europe, was educated by the BCL and worked during most of his life in the Netherlands (Israel, 1995). The major individualistic reform movements that revolted against medieval scholasticism and the institutions that underpinned it, were laid by the BCL. It was spread by individuals, who were (despite the political environment) able to influence and teach citizens how to read and write (Hyma, 1924, p. 16).

The impact of the BCL on Christian humanism and society can be seen from the relations between the leading thinkers of the BCL and Christian humanism. Figure 2 presents a network graph of the most important people educated by the BCL from 1400 to about 1550. The persons in the network are sorted according to their year of death. The dark grey nodes indicate that persons were either affiliated with or educated by the BCL. The size of each node shows the centrality of a person, i.e. how central a person and his neighbours are in the network. Figure 2 shows that people affiliated to the BCL penetrated into the age of the Reformation and had connections with leading figures in German, Swiss and British reform movements. Intellectuals educated by the BCL include the humanists Erasmus and Mutianus; printers such as

[13] In Deventer, the BCL cooperated with the Windesheim Congregation and the Chapter Sion under the Augustinian Canons Regular. These were influential institutions in the local Roman Catholic Church.

[14] Before 1490 Christian humanism had an impact on the culture of the Netherlands through the urban and Latin schools. Geert Groote attended the Latin School in Deventer. Alexander Hegius (1439–98), who was Agricola's main pupil, was the headmaster of the Latin School in Deventer from 1483 until 1493. This school, famous in the whole area including the German region of Westphalia, was the seed-bed of Dutch humanism. Erasmus (1466–1536) attended this school between 1475 and 1484. Around 1500, Deventer was the centre of humanist book production in Northern Europe with more Greek text editions than Paris (Schoeck, 1988).

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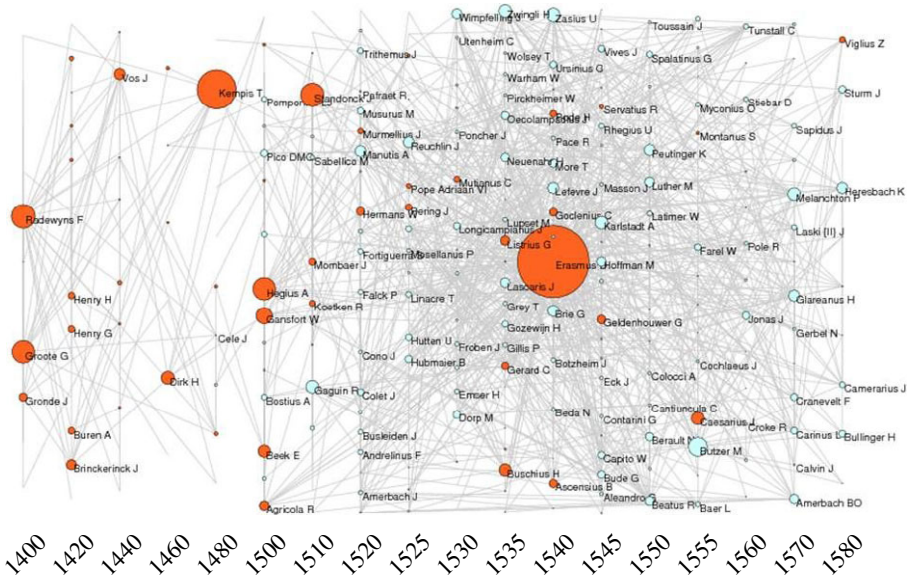


Fig. 2. *Chronological Network of Important People, 1400–1550*
Notes. Dark grey nodes refer to Dutch people, light grey nodes to foreigners. See subsection A.2.6 of the online Appendix for more details on the construction of the network.

Ascensius (Jose Bade); prominent mystics and scholars such as Gansfort, Agricola and Kempis; and influential educators such as Cele, Hegius, Dringenberg, Standonck and Sturm. More information on the data used to construct this network is provided in the online Appendix.

1.3. *Building Human Capital*

The BCL built human capital in three ways: copying and printing books, supplying education to all and institutionalising education to make it more effective and efficient.

1.3.1. *Copying and printing books*

Before the invention of the printing press, books were duplicated simply by copying from a master book, which in most cases was obtained through personal contacts. Copying books was an essential activity for the BCL (Hyma, 1968).[15] Agricultural work did not associate with the movement's cause and moreover book production was a major source of income for the BCL. Books copied by the BCL were known for accuracy and quality (Haselden, 1939).

[15] It was mentioned in the constitution of the Deventer and Zwolle houses: 'Our houses were founded with the intention that, in imitation of the Primitive Christian Church, priests and clerics might live there supported by their own labour, namely the copying of books, and by the return from certain estates' (Hyma, 1968, p. 15). In the 1440s, the rector in Doesburg turned manual work into agriculture and was dismissed (Post, 1968, p. 384).

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Table 1

Book Production (Printed) in the Netherlands before 1500

City	Book editions per 1,000 inhabitants	Number of book editions	Share in the Netherlands and Belgium
Deventer	91.43	640	0.27
Zwolle	21.86	153	0.06
Antwerp (Belgium)	15.97	479	0.20
Louvain (Belgium)	15.71	267	0.11
Gouda	10.91	120	0.05
Leiden	4.00	56	0.02
Utrecht	3.45	69	0.03

Notes. A total of 2,378 editions were produced in the Netherlands and Belgium before 1500 (see Table 2). Population figures are from Bairoch *et al.* (1988). The source of the data is the British Library Incunabula short title catalogue (http://www.bl.uk/catalogues/istc/index.html).

With the invention and diffusion of the printing press around 1450, copying manuscripts became inefficient and unprofitable. There were three implications of this development. First, brothers started to engage more heavily in teaching to compensate for the loss of income. Second, the BCL bought printing presses and supported other printers. Third, brothers divided the labour and became more specialised and efficient. Some focused on printing, others on illustrations or ornamental letters etc. By 1490, about sixty printing establishments were controlled by the BCL (Haselden, 1939). In Brussels, the BCL operated the first and only printing press. All books published before 1500 from Brussels were printed by the BCL. Table 1 provides an overview of all books published before 1500 in the Netherlands and Belgium. Most of the editions were coming from the printing presses in Deventer (640 editions) and Zwolle (153 editions); 177 were classics (Strand, 1968, p. 55). For comparison, the well known printing centre in Antwerp printed 479 editions. *The Imitation of Christ* by Thomas à Kempis was one of the most important books printed (Leibell, 1924). The high density of printing presses is confirmed by Dittmar (2011). He shows that the share of cities adopting printing presses is among the highest in the Netherlands. In addition, the number of book editions relative to the size of the population was also high in the Netherlands, as shown in Table 2.

We view the production of books as an indicator of human capital as it seems likely that the supply of books is correlated with the demand for books. The production of books required skilled people who were able to read and write. Due to relatively high transportation costs in that period we expect that a substantial part was produced for the home market. For Deventer, this is certainly the case because students of the Latin school were important customers. In addition, the spread and selling of books among citizens could only be successful because it used vernacular. Both production and consumption demanded citizens who were able to read.

1.3.2. *Education for all*

The BCL not only established houses but also paid considerable attention to public schools. Through this channel they were able to reach parts of society not directly influenced or controlled by to the Roman Catholic Church. This seems important for

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Table 2

Book Editions Per Capita in Major European Countries

	Number of book editions before 1500	Population in 1500 (1,000s)	Book editions per inhabitants
	(1)	(2)	(1)/(2) = (3)
Low Countries	2,378	2,350	1.012
the Netherlands	1,110	950	1.168
Belgium	1,268	1,400	0.906
Italy	10,557	10,500	1.005
Germany + German speaking Austria and Switzerland	10,486	14,300	0.733
France + French speaking Switzerland	5,437	15,300	0.355
Spain + Portugal	1,107	7,800	0.142
England	412	3,942	0.105

Notes. Population numbers are taken from Angus Maddison's project. http://www.ggdc.net/MADDISON/oriindex.htm. The number of book editions is taken from Incunabula Short Title Catalogue of British Library (http://www.bl.uk/catalogues/istc/index.html).

social and economic development outside the influence of the church. Schools in Deventer and Zwolle were among the best schools in transalpine Europe in the fifteenth century (Hyma, 1924; Post, 1968).[16] John Cele (the rector of the BCL school in Zwolle from 1375 to 1417) and Alexander Hegius (rector from 1483 until 1493) are well known educators who supported the ideals of the BCL for monastic reform (Post, 1968). The BCL supported schools and intervened in the selection process of teachers and rectors.

The Deventer school reached 2,000 students under Hegius and the Zwolle school attracted about 1,200 students under the direction of John Cele. Given the population figures of the mid-fifteenth century, in both cities about 25% of the inhabitants were educated by the BCL.[17] The BCL also established schools in various cities in the Netherlands and Germany such as Utrecht, Amersfoort, Nijmegen, Liege, Delft and Ghent. Post (1954, pp. 134–5) reports that schools in Amersfoort, Nijmegen and 's-Hertogenbosch had between 500 and 1,000 students. In some cases ('s-Hertogenbosch), the schools were established because the city magistrate requested the BCL to control the education in the city (Gem, 1907). In Utrecht, the BCL had the monopoly on the supply of schools for pupils aged 12 and above.[18] Similarly, in Amersfoort all secondary schooling was controlled by the BCL by 1555 (Henkel, 1968).

[16] A large number of the letters of Groote were written to the rectors of Deventer, Zwolle and Kampen.

[17] To illustrate the significance of this number in terms of education we compare it to contemporary Boston and London, two university cities (see http://www.rmit.com.au/browse;ID=q3l220b3wzs5 for details). In 2009, there were about 135,000 students in tertiary education in Boston, which equals 21%of the Boston population. The figures are for students who are enrolled in a university in Boston city. If we consider all universities in the metropolitan area, the number is 6% (U.S. Department of Education National Center for Education Statistics at http://nces.ed.gov/globallocator/). For London (student population of about 400,000) the figure is 6% (http://www.londonhigher.ac.uk/294.html). The number is 12% for Amsterdam (about 89,000 students).

[18] Post (1954, p. 55) notes that the BCL school in Utrecht was the only school of significance in the city.

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A major challenge was to spread literacy to more rural areas. By setting up hostels and dormitories for poor children, the BCL made education more accessible and encouraged poor children to attend schools. In Deventer, Zwolle, Amersfoort and 's-Hertogenbosch the hostels were large enough to accommodate up to two hundred pupils. Most of them attended the public school or the BCL school in the city. The existence of such hostels has also been established for Delft, Doesburg, Gouda, Groningen, Nijmegen and Utrecht (the Netherlands), Ghent and Brussels (currently Belgium) and Muenster and Emmerich (Germany) (Post, 1968, p. 466). Brothers generally played a role in the spiritual needs of these children but most of the time helped them with their studies. In all hostels there was a brother who was assigned the task to go over what students learned in class (Post, 1968, p. 394). Students were also hosted in houses of citizens of BCL cities, such as Harderwijck (300 students), Zwolle (500 students), Nijmegen and 's-Hertogenbosch. Around 1400, every citizen of Deventer hosted one or more 'devote students' (Post, 1954, pp. 166–9). At the same time BCL houses were also established in smaller cities. 12 out of 35 BCL-cities had less than 1,000 inhabitants.

1.3.3. *Institutionalising education*

The eight-grade system, which is still what the current educational systems in most Western countries is based on, was originally introduced by John Cele in Zwolle and later successfully adapted by the Deventer BCL school. This innovation, that significantly improved teaching standards, had a great impact on institutionalising education.

By dividing secondary school education into eight classes, the curriculum became less demanding for children. The first grades were based on more practical teaching (i.e. knowledge that everybody needs) and advanced courses were taught later on. The usual teaching day of about ten hours was reduced by almost 50%. The most important innovation of the eight grade division was the inclusion of *trivium* (grammar, logic and rhetoric) and *quadrivium* (arithmetic, geometry, music and astronomy) in the curriculum.

The BCL was instrumental in transferring this innovation in education to other cities in the Netherlands and parts of Germany. The system reached a degree of maturity under Hegius and gradually diffused from Deventer to other cities.[19] Germany, Belgium and Switzerland followed the earlier innovations in education with a lag of about a century. It is interesting to observe that the reflection of this on literacy rates was persistent until the mid-eighteenth century (Allen, 2003). In Figure 3*a* we can see this by plotting literacy rates from 1600 to 1775 (see the online Appendix, subsection A.2.1, for the data collection). As can be seen from the graph, literacy rates in the Netherlands were about two times those of Germany and this gap closed only in the mid-eighteenth century. The picture is even clearer if we compare literacy rates in different parts of Germany and the Netherlands. Figure 3*b* compares literacy in

[19] The historical literature reports direct links with Schlettstadt, Muenster, Amersfoort, Liege, Strasbourg, Geneva and Rome (Hyma, 1924). Both Pijper (1914) and McCarrel (1934) link the BCL with educational institutions in the US and England. See also Congleton (2008) for a comprehensive view on the link between the early development of the Netherlands and America's early constitutional development.

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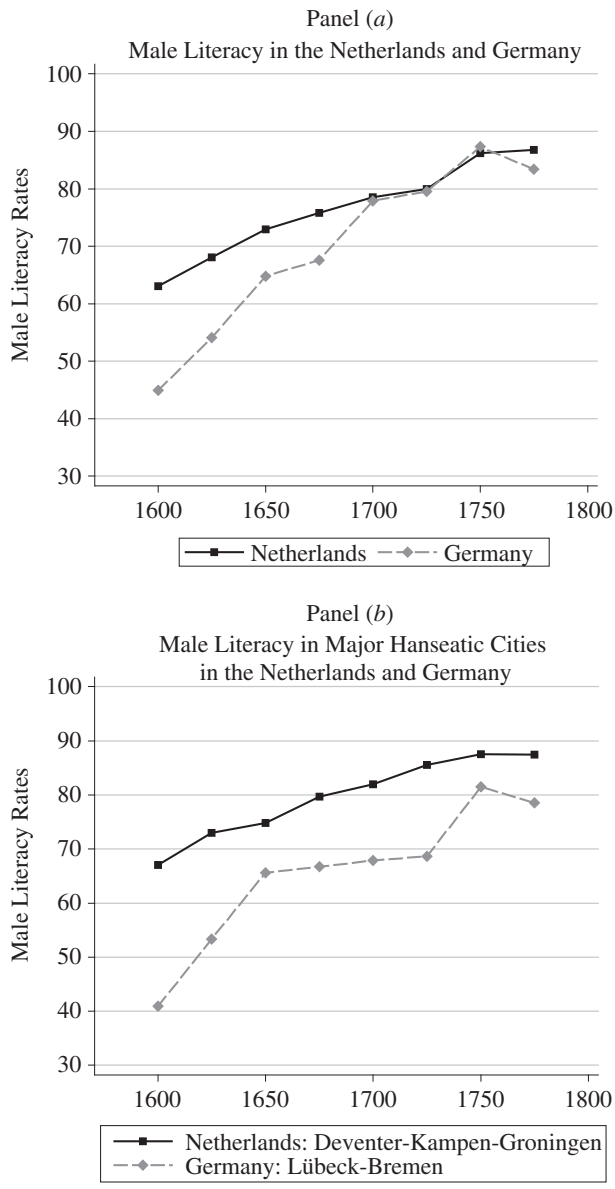


Fig. 3. *Male Literacy Rates in the Netherlands and Germany*
Notes. The source of the data is Hart (1976) and the Amsterdam Archives. See subsection A.2.1 of the online Appendix for more details.

Hanseatic trade cities in the eastern part of the Netherlands (Deventer, Kampen and Groningen) with those in German Hanseatic trade cities (Bremen and Lübeck). It seems that the cities that are closer to the Dutch border were more literate than the ones located in the eastern part of Germany. West German towns had comparable literacy rates relative to their Dutch neighbours starting from the eighteenth century.

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There seems to be a literacy gap ranging from 70% in 1600 to 15% in 1800 between the Netherlands and West Germany. Considering that the Hanseatic cities are involved in trade, we expect literacy rates to be lower in other parts of Germany.[20]

1.4. *Economic Development and Urbanisation*

The increased supply of human capital was met by the emergence of modern structures in the fifteenth century. There was a sharp increase in urbanisation rates from about 15% in 1300 to 45% in 1500 (Van Bavel and Van Zanden, 2004). This rapid rise to the highest level of urbanisation in Europe in 1500 has been attributed to the difficulties with rising water tables and subsiding peat soils, which made arable agriculture expensive, and with the mild impact of the plague in the Netherlands (Van Bavel, 2002). In contrast to England, for example, the population of the Netherlands grew in the fifteenth century. It is well known that urbanisation played a central role in the emergence of modern economic growth (Braudel, 1979). Bairoch (1988) argues that urban life generated social interactions that improved information flows and increased innovation. DeLong and Shleifer (1993) and Acemoglu *et al.* (2005) also observe that cities were important for shaping economic progress in Europe.

Urbanisation changed the nature of production.[21] The Netherlands experienced an early transition towards industrialisation. This process is enhanced by human capital accumulation because it allows for trade. International trade was earlier organised by the Hanseatic League. The BCL was important in cities such as Deventer, Kampen, Zwolle, Groningen and Zutphen, which also took part in Hanseatic trade. However, the diffusion of the BCL in the Netherlands did not occur along these trade routes.[22] The effect of Hanseatic trade will be discussed in Sections 2 and 4.

Finally, sea-going trade has been crucial for the rise of Europe (Acemoglu *et al.*, 2005). However, the time period we study in this paper came before the period in which sea-going trade became important. Table 3 shows the ten largest Dutch cities in 1400, 1560 and 1800. Of the ten largest cities in 1400, five have a sea border. The largest two cities do not. Amsterdam is not in the list of largest cities, nor is Rotterdam. In 1560, Amsterdam is the largest city. Next to Amsterdam, Haarlem, Delft, Leiden and Dordrecht have a direct sea connection. Only in 1800, are the largest cities (Amsterdam and Rotterdam) the ones with a sea connection. The government capital of The Hague is third in terms of population. It seems to be the case that there is a watershed in the development of the Netherlands after 1560. This has been attributed to the commercial interest of international trade that shaped conflicts between the

[20] Allen (2003) presents data, which suggest that literacy rates in the Netherlands are about 40% in 1600. In France, Germany and the UK literacy rates were lower in 1600 (between 12% and 19%).

[21] Most cities in the Netherlands were granted city rights in the early Middle Ages, which is before genesis of the BCL. Deventer received city rights in 956, Groningen in 1050 and Utrecht in 1127. Before 1300, more than 70% of all Dutch cities had city rights.

[22] The BCL spread to cities in Brabant and Holland, which cannot be linked to the waterways used by the Hanseatic League. The primary reason was that Deventer was not a key player in the League. Its trade took place with the cities in Holland and Zeeland and the South-Eastern hinterland. This network was already established before the League became important in the Netherlands. The rulers of the city of Deventer were also not very interested in the decisions made by the League. Representatives of the city were not often present at the annual meetings and the city did not take part in naval wars (Slechte, 2010).

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Table 3

Largest Cities (Inhabitants) in 1400, 1560 and 1800

City	1400	City	1560	City	1800
Utrecht	13,000	Amsterdam	30,000	Amsterdam	221,000
's-Hertogenbosch	9,000	Utrecht	27,500	Rotterdam	53,212
Dordrecht	7,500	's-Hertogenbosch	17,500	Den Haag	38,433
Haarlem	7,500	Haarlem	16,000	Utrecht	32,294
Maastricht	7,000	Delft	15,000	Leiden	30,995
Roermond	6,600	Maastricht	13,500	Groningen	23,770
Delft	6,500	Leiden	12,500	Haarlem	21,227
Zierikzee	6,300	Groningen	12,500	Dordrecht	18,014
Middelburg	6,300	Dordrecht	10,000	Maastricht	17,963
Nijmegen	6,000	Nijmegen	10,000	Middelburg	17,687

Sources. Lourens and Lucassen (1995); Israel (2001).

Habsburg rulers and Dutch merchants (Israel, 1995).[23] The developments in the Netherlands in the fifteenth century seem different from the conflicts around the creation of the Dutch West India Company in the early seventeenth century.

Industrialisation, trade and urbanisation require human capital. Various recent studies provide evidence for the impact of human capital formation on economic change in fifteenth and sixteenth century Europe (Baten and Van Zanden, 2008) but are silent about the sources of the supply of human capital. The founding and diffusion of the BCL in the Netherlands might explain how the supply of human capital increased.

2. Data and Empirical Strategy

The aim of the empirical analysis is to investigate the impact of the BCL on economic and societal outcomes formally. Our main variables are: BCL presence, book production, literacy rates and city growth. We use a number of data sources for these variables. In this Section, we present the most salient details. Detailed variable definitions and data sources as well as an elaborate description of our data treatment can be found in the online Appendix.

2.1. *Data*

Our main independent variable is a dummy for BCL presence. Information is collected from Hyma (1924, 1950, 1951, 1968), Post (1968), Fuller (1995), Scheepsma (1997) and Van Engen (2008). Figure A1 shows a map of the Netherlands in which we show the cities with a BCL house. For most cities we also have information about the number of BCL houses. There are 15 cities with more than one BCL house.

As dependent variables we use two indicators of human capital: book production and literacy rates. The data on book production for the period 1470–1500 are taken

[23] Van der Wee (1971), Van Zanden (1993) and De Vries and Van der Woude (1997) reach similar conclusions.

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from the British Library Incunabula Catalogue. This catalogue documents almost 30,000 editions of books. A total of 2,378 editions were produced in the Netherlands and Belgium before 1500. We count the number of editions printed in each of the cities in our sample and divide them by 2,378 to obtain a measure of the relative importance of a city in total book production. The main reason to use this measure is that the number of printed books in each edition is unknown. It ranges from a small number of copies to at least 1,000 copies per edition. By using the book share we try to moderate these differences in the number of printed books per edition.

Data on literacy in 1600 come from the Amsterdam Archives and Hart (1976). There are almost one million marriages in the period 1580–1810, which implies almost two million observations. The data reveal that the percentage of non-Amsterdam born brides and grooms ranges from around 40 in the late sixteenth to about 70 in the early seventeenth century (Hart, 1976). Since we know the place of birth of people, we obtain literacy information for 33 cities in the period 1600–25. The total number of observations is 12,152. Male literacy is defined as the share of grooms that signed, by writing their names, to register their marriage in Amsterdam instead of stamped for it by finger print. Hence, literacy rates are constructed as the share of grooms that signed from the sample of grooms born in a specific city.

Because travelling was not easy in that period, it seems likely that grooms born in other cities than Amsterdam were migrants. It seems highly unlikely that they went to Amsterdam just for marrying. The pattern of migration to Amsterdam in the period 1600–25 shows that more grooms have entered the city (6,610) than brides (5,542). Almost a quarter of these migrants are from North Holland, the province in which Amsterdam is located. About 18% are from the surrounding two provinces (Utrecht and Zuid Holland). Table A3 shows the literacy rate for each of the 33 cities for which we have data. Information about the occupations of grooms is scarce and cannot be linked to migrants. Aggregate statistics reveal that about 20% of them are tailors and cobblers. Also a large group is involved in jewellery production (gold and silversmiths and diamond polishers). A small group is employed in education and medicine.

This sample from 1600 might induce estimation bias if individuals with specific characteristics are more likely to migrate. Unfortunately, no other independent sources are available about literacy rates at the city level. In addition, studies on migration towards Amsterdam typically take the perspective from the receiving city and are not informative about which individuals stayed and which individuals left for Amsterdam (Knotter and Van Zanden, 1987; Lesger, 2006). The first type of bias that might arise is related to measurement error. If distance is a constraint for migrating to Amsterdam, we expect relatively more migrants from cities closer to Amsterdam. This increases the size of the sample for which we measure literacy. Hence, for cities further away from Amsterdam the measurement error will be larger. However, we expect little bias for our estimates because distance from Amsterdam is unrelated to the BCL and our instrument ‘Distance from Deventer’ (see below). In addition, we include distance from Amsterdam as a control with the aim of mitigating this potential bias. Moreover, we investigate whether the estimation results are robust when the observations are weighted by the number of grooms from each city.

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A second type of bias arises when literate individuals are more likely to migrate to Amsterdam. In that case we would overestimate literacy rates and differences in literacy rates between cities.[24] If the BCL increased literacy and literate people were more likely to migrate to Amsterdam, this would induce an upward bias for the effect of literacy in our estimations. As mentioned above, we do not know whether literate people were more or less likely to migrate to Amsterdam. The relationship between distance from Amsterdam and literacy might shed some light on this issue. Distance from Amsterdam seems a natural constraint for migrating to Amsterdam inducing a lower probability of migration for individuals in cities further away from Amsterdam. If the benefits of migrating to Amsterdam were higher for literate than for illiterate individuals, the cost of travelling would restrain illiterate individuals earlier from migrating to Amsterdam. This could induce a positive relationship between distance from Amsterdam and literacy rates. However, in our data distance from Amsterdam is unrelated to literacy rates (also after controlling for population size in 1400). In addition, the rate of literacy in Amsterdam in 1600 was close to the average in our data; 70.1% for Amsterdam, 65.5% on average in the Netherlands (Kuijpers, 1997).

As our third dependent variable we look at city growth. We use data on city growth between 1400 and 1560 for a sample of 67 cities with 1,000 and more inhabitants in 1400. Data on smaller cities (around 500 inhabitants) are unreliable because for most of these cities a number of exactly 500 has been reported (Lourens and Lucassen, 1995).

Table 4 shows descriptive statistics of our main variables for cities with and without a BCL house. Based on these statistics, the presence of the BCL is associated with a higher literacy rate in 1600, more book production and higher growth of the population until 1560.

2.2. *Empirical Strategy*

For the empirical analysis we follow a two-step approach. As a first step we regress a specific outcome (Y) for city i on the presence of the BCL (BCL) and include a set of controls (X):

$$Y_i = \alpha_0 + \alpha_1 BCL + \alpha_2 X_i + \varepsilon_i. \quad (1)$$

Estimation of this equation provides us with a co-efficient for the association between the BCL and the outcome of interest. A concern with this estimation is that the location of BCL houses might not be random. For instance, the presence of the BCL might depend on the local demand for education, the wealth of a certain area or city growth in the previous period. If such factors are correlated with the outcome variable, but unobserved by the researcher, the estimated association in (1) does not yield the causal effect of the BCL on the outcome variable.

[24] A related concern with these data could be that males from cities in which the BCL is present are more successful because they are more likely to be literate. We, therefore, investigated whether marriage rates in BCL cities are higher than in other cities in 1795, the year for which the first marriage data for the Netherlands are available. This is not the case.

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Table 4
Descriptive Statistics

	Cities without BCL			BCL cities			
	n	Mean	SD	*n*	Mean	SD	*t*-test
Literacy 1600	18	0.629	0.110	15	0.688	0.065	*
Literacy 1675	18	0.759	0.102	15	0.757	0.070	
Literacy 1750	18	0.855	0.084	15	0.868	0.061	
Literacy 1860	44	0.849	0.109	23	0.880	0.065	
Book share 1470–1500	44	0.001	0.005	23	0.041	0.123	**
Population 1400	44	2,563.6	2,094.7	23	4,026.1	2,800.8	**
Population 1560	44	3,720.5	3,313.6	23	8,930.4	7,592.5	***
Population 1795	44	6,779.5	10,119.0	23	19,216.0	4,4803.7	*
City growth 1400–1560	44	0.367	0.497	23	0.684	0.378	***
City growth 1400–1795	44	0.663	0.884	23	0.918	0.796	
Sea	44	0.295	0.462	23	0.261	0.449	
River	44	0.250	0.438	23	0.522	0.511	**
Distance from Deventer	44	113.8	42.5	23	68.1	39.3	***
Distance to Roman settlement or route	44	50.1	42.8	23	33.1	33.4	
School before 1400	44	0.227	0.424	23	0.347	0.487	
Hanseatic League (dummy)	44	0.182	0.390	23	0.478	0.511	**

Notes. The results of a two-sample mean comparison test are indicated by an asterisk (***p < 0.01, **p < 0.05, *p < 0.10). Variables are defined in the online Appendix and/or Section 2. BCL, Brethren of the Common Life.

To investigate further whether the associations between the BCL and outcomes can be interpreted as a causal relationship, we apply an instrumental variable approach, in line with some recent studies on the impact of historical events (Becker and Woessmann, 2009; Dittmar, 2011). The BCL was founded in Deventer. In the early period, human capital was developed in Deventer and diffused to other BCL houses across the country. We use the distance from Deventer (*DD*) as an instrument for the presence of BCL activity. This yields the following first-stage equation:

$$BCL_i = \beta_0 + \beta_1 DD_i + \beta_2 X_i + u_i. \quad (2)$$

The identifying assumption is that distance from Deventer is not correlated with the unobserved factors in (1). The history of the foundation of the BCL suggests that the location of Deventer as the base location can be considered as random. Geert Groote founded the BCL. His motivation was religious and unrelated to the economic and social outcomes we investigate in this study. Distance from Deventer is expected to be important for the diffusion of the BCL because in those days even small distances meant a lot of travel time. Hence, distance would have played a role in the choice of the locations of new BCL houses. In addition, the BCL formed the Modern Devotion movement which was managed from Deventer. For the maintenance and growth of the new movement in a critical environment, distance to the intellectual sources in Deventer should have been important. The Deventer BCL community acted as the centre of the movement. As early as the end of fourteenth century missionaries were sent to Amersfoort, Muenster and Delft to form BCL houses in the spirit of the houses in Deventer (Hyma, 1924). The houses in Deventer produced rectors, priests and procurators for other houses in the Netherlands (Post, 1968). This way the BCL houses in Deventer interacted with other houses in the country.

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2.3. *Credibility of the Identifying Assumption*

To assess the credibility of our identifying assumption, we investigate the association between distance from Deventer and several pre-1400 variables: the presence of schools before 1400, city population in 1300 and in 1400, city growth before 1400, the presence of other religious orders and Hanseatic trade. To attribute causality to our estimates, *DD* should be unrelated to other 'early factors' that could influence the accumulation of human capital or city growth. The results of this exercise are displayed in Table 5.

The first row in Table 5 shows the OLS estimate of distance from Deventer on the presence of schools before 1400. We collected the data on the presence of schools before 1400 from Post (1954). The estimate indicates that distance from Deventer is not related to early educational efforts. Rows (2)–(4) show estimates of the association between distance from Deventer and city population between 1300 and 1400. Information about populations before 1400 is only available for 15 Dutch cities.[25] We find no association between distance from Deventer and the (change in) city population between 1300 and 1400.

Table 5

Exogeneity of the Instrument (Distance from Deventer)

Dependent variable		Distance from Deventer	Observations
Human capital	(1) Schools before 1400	−0.003	67
		(0.004)	
Economic growth	(2) Population 1300	−0.004	15
		(0.004)	
	(3) Population 1400	0.003	67
		(0.002)	
	(4) Population growth, 1300–1400	0.004	15
		(0.004)	
Other religious orders	(5) All monasteries	0.001	67
		(0.003)	
	(6) Modern Devotion	−0.010**	67
		(0.004)	
	(7) Tertiarians	0.001	67
		(0.003)	
	(8) Franciscans	0.003	67
		(0.003)	
	(9) Beghards and Beguines	0.007*	67
		(0.004)	
	(10) Cistercians	−0.002	67
		(0.003)	
Trade	(11) Hanseatic League	−0.008*	67
		(0.004)	

Notes. The dependent variable in row (1) is a dummy variable indicating whether a city had a public school before 1400. The dependent variables in rows (2)–(4) are log population in 1300, log population in 1400 and population growth 1300–1400. The dependent variable in rows (5)–(10) is a dummy variable indicating whether the city has a monastery (of a certain type) within walking distance of 5 kilometres. The dependent variable in row (11) is a dummy for being a Hanseatic trade city. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.10.

[25] Bairoch *et al.* (1988) report population figures for 1300 and 1400 for Amsterdam, Delft, Deventer, Dordrecht, Groningen, Kampen, Leiden, Maastricht, Middelburg, Nijmegen, 's-Gravenhage, 's-Hertogenbosch, Schiedam, Utrecht and Zutphen.

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Rows (5)–(10) show the association between distance from Deventer and other religious orders. In the medieval period, a number of religious orders are dominant in Northern Europe. They all influenced society through the Roman Catholic Church. In the Netherlands, there were five prominent monastic orders in this period (Tertiarians, Franciscans, Cistercians, Beghards and Beguines, and Modern Devotion).[26] We have collected data on these religious orders and assigned them to cities. All monasteries within 5 kilometres of a city are assigned to that city.[27] Subsection A.2.7 in the online Appendix provides more details about the data on the monasteries of these religious orders. Row (5) shows the association between distance from Deventer and the presence of a monastery regardless of its denomination. The estimate reveals no pattern in relation to our instrument distance from Deventer. The next row shows the association with the Modern Devotion. We find a negative and significant co-efficient, which is consistent with the fact that these monasteries were strongly influenced by the body of thoughts of Geert Groote and placed under rule by the BCL. For the other four types of monasteries, we find a significant association between our instrument and the presence of the Beghards and Beguines. However, this association is positive implying that moving further away from Deventer increases the probability of the presence of such monasteries. If the religious order has had a positive effect on human capital accumulation and growth, this association would reduce the IV estimates of the effect of BCL on these outcomes.

Row (11) shows the association between distance from Deventer and the Hanseatic League. Deventer and several other cities located on the IJssel river (Zwolle, Kampen and Zutphen) participated in the League. This explains the significant negative association of distance from Deventer and Hanseatic trade. It should be noted that the organisation and structure of the League before 1400 is diffuse, and membership of the League and the timing of the membership is unclear (Weststrate, 2000). The association is no longer statistically significant when Deventer is not included. In sum, the pre-1400 variables, except for Hanseatic League, do not suggest concerns about the independence assumption of our IV approach. In Section 4, we further investigate the possible bias that might arise from the Hanseatic trade by re-estimating the main models controlling for Hanseatic League membership.

3. Estimation Results

This Section presents three sets of results of how the BCL affected human capital accumulation and economic development and how it fostered societal change.

3.1. *The Effect of the BCL on Human Capital*

In addressing the effects of the BCL on human capital, we present two pieces of evidence. First, Tables 6 and 7 present estimates in which we explain differences in

[26] The Tertiarians lived outside cloistered communities. They had simple vows to certain prayers and observances of the order, which is much like the mixed life promoted by the BCL. The Franciscans lived according to the regulations known as 'The Rule of St. Francis'. The Cistercians were a religious order of monks living in monasteries. The Beghards and Beguines were religious communities living in a loose semi-monastic community but without formal vows. The monasteries of Modern Devotion are part of the BCL.

[27] Using distances of 10 and 20 kilometres does not alter the picture.

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Table 6

OLS Estimates of the Impact of the Brethren of the Common Life (BCL) on Book Production in the Netherlands, 1470–1500 (Dependent Variable: Share of Book Editions in Total Printed Book Production in the Netherlands, 1470–1500)

	Book share			
	OLS			
	(1)	(2)	(3)	(4)
BCL	0.023**	0.020**	0.019**	
	(0.010)	(0.009)	(0.009)	
Number of BCL houses				0.011***
				(0.003)
Log pop 1400		0.009*	0.006	0.002
		(0.005)	(0.005)	(0.004)
Sea			−0.009	−0.005
			(0.009)	(0.008)
River			0.004	0.002
			(0.016)	(0.014)
Roman			−0.000	−0.000
			(0.000)	(0.000)
Constant	0.002	−0.068*	−0.044	−0.018
	(0.002)	(0.038)	(0.035)	(0.028)
Observations	66	66	66	66
R-squared	0.160	0.202	0.239	0.478

Notes. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.10. All estimations are weighted by population.

book production across cities in the period 1470–1500 by the presence of local BCL houses and by the number of BCL houses. Second, Table 8 reports results of an analysis in which we explain differences in literacy rates around 1600 by the presence of the BCL in cities and by the number of BCL houses. It is likely that these two indicators of human capital (book production and literacy) are correlated. For example, book production has probably increased literacy. If the BCL influences book production, this could also have led to increases in literacy in the cities in which houses were present. As such, the separate analyses of book production and literacy are likely to yield some 'double counting' because one indicator of human capital could serve as an intermediate factor for the other indicator. However, for our analysis this seems irrelevant because we do not intend to add up the two estimates. Our primary interest is in the effect of the BCL on human capital accumulation in the Netherlands.

The first column in Table 6 reports the OLS estimate of the BCL dummy variable on the production of books in 66 cities in the Netherlands. The production of books is proxied by the share of book editions. We use data on book production in the period 1470–1500 because this is the earliest possible period for which data are available, since the invention of the printing press around 1450 in Mainz (Dittmar, 2011). We use editions, because the number of books per edition is not known. We have left the city of Deventer out of the analysis because a huge share of the total book production in the Netherlands was done in Deventer in the late fifteenth century (see Table 1) and Deventer is the source from which the BCL originated. The estimated co-efficient

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Table 7

2SLS Estimates of the Impact of the Brethren of the Common Life (BCL) on Book Production in the Netherlands, 1470–1500 (Dependent Variable: Share of Book Editions in Total Printed Book Production in the Netherlands, 1470–1500)

	BCL	Book share	BCL	Book share	BCL number of houses	Book share
	1st stage	2SLS	1st stage	2SLS	1st stage	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
BCL		0.026*		0.024		
		(0.015)		(0.015)		
Number of BCL houses						0.007**
						(0.003)
Dist. Deventer	−0.006***		−0.008***		−0.026***	
	(0.001)		(0.001)		(0.005)	
Log pop 1400			0.310***	0.005	1.135***	0.004
			(0.067)	(0.005)	(0.241)	(0.004)
Sea			−0.070	−0.010	−0.716**	−0.006
			(0.136)	(0.009)	(0.349)	(0.008)
River			−0.237	0.004	−0.616	0.003
			(0.185)	(0.016)	(0.574)	(0.014)
Roman			0.000	−0.000	0.004	−0.000
			(0.002)	(0.000)	(0.007)	(0.000)
Constant	1.084***	0.001	−1.201**	−0.041	−5.230***	−0.032
	(0.112)	(0.005)	(0.493)	(0.036)	(1.703)	(0.029)
Observations	66	66	66	66	66	66
F-test	61.01		54.00		22.59	
R-squared	0.305	0.158	0.458	0.234	0.496	0.439

Notes. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.10. All estimations are weighted by population.

suggests that the presence of the BCL increases the share of book production by 2.3-percentage points. Controlling for population size in 1400 and geographical factors (dummy variables for location at the sea, a major river or a Roman trading route) does not substantially change the effect, as the estimates in columns (2) and (3) suggest. Because Deventer produced so many books in the Netherlands, leaving out Deventer reduces the size of the estimated co-efficients. We weight the observations by city population in 1400 because of the likelihood of measurement error in smaller cities with only little or no book production. As Table 1 has shown, the production was rather skewed with a substantial part of the books produced in a few cities, such as Zwolle, Gouda, Utrecht and Leiden. In column (4), we present the estimates of including the number of BCL houses instead of a dummy for BCL presence. The estimate is comparable to the one in column (3).

In Table 7, we report the estimates of the instrumental variable regression. In the results displayed in columns (1)–(6), we instrument the BCL by distance from Deventer to show that it is likely that the BCL had a positive effect on book production. The first-stage results reported in columns (1), (3) and (5) reveal negative and significant correlations between distance from Deventer and the BCL. The F-tests are sufficiently large to ensure that the analysis does not suffer from weak instruments. The 2SLS estimates in columns (2), (4) and (6) show statistically significant positive effects

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Table 8

The Effect of the Brethren of the Common Life (BCL) on Literacy in the Netherlands around 1600 (Dependent Variable: Male Literacy Rates in 1600)

	Literacy	Literacy	Literacy	BCL	Literacy	BCL	Literacy	BCL number of houses	Literacy
	OLS	OLS	OLS	1st stage	2SLS	1st stage	2SLS	1st stage	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BCL	0.059*	0.054**			0.310**		0.290***		
	(0.031)	(0.025)			(0.115)		(0.090)		
Number of BCL houses			0.017**						0.062**
			(0.007)						(0.023)
Dist. Deventer				−0.005**		−0.006***		−0.027***	
				(0.002)		(0.002)		(0.006)	
Log pop 1400		0.006	0.002			0.216**	−0.040	1.000***	−0.039
		(0.017)	(0.018)			(0.086)	(0.045)	(0.310)	(0.031)
Dist. Amsterdam		0.000	−0.000			−0.002	0.000	0.003	−0.000
		(0.000)	(0.000)			(0.002)	(0.001)	(0.007)	(0.000)
Constant	0.629***	0.582***	0.631***	0.846***	0.515***	−0.608	0.806**	−4.457*	0.904***
	(0.026)	(0.136)	(0.141)	(0.172)	(0.055)	(0.716)	(0.310)	(2.600)	(0.218)
Observations	33	33	33	33	33	33	33	33	33
F-test				6.66		9.79		16.50	
R-squared	0.096	0.099	0.131	0.177		0.365		0.466	

Notes. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.10.

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of the BCL on the share of printed book production across the 66 cities in our sample. The standard errors in the 2SLS approach are higher, which leads to a drop of statistical significance to the 10% level. The point estimates remain similar. These estimates indicate that the presence of the BCL increased book production with 2–3-percentage points. The final two columns report estimates for the number of BCL-houses, which also show a positive effect of BCL on book production.

In Table 8, we show the results of a regression analysis in which we estimate the effects of the BCL on male literacy in 1600. Our sample consists of 33 cities for which literacy data is available as early as 1600. The coefficient in column (1) suggests that literacy is about 6-percentage points higher in BCL cities. In columns (2)–(3) we add (log) population in 1400 and distance to Amsterdam to the model specification to mitigate concerns about selection bias due to the collection of these data (see subsection 2.1). The estimated co-efficients for the BCL remain similar and distance to Amsterdam does not have a significant effect on literacy outcomes. Because of the small number of observations, we do not add more covariates to the regression equation.[28]

The instrumental variable analysis is reported in columns (4)–(9) of Table 8. The first-stage estimates show that distance from Deventer is associated with the probability of a BCL house in a city. Each 10 kilometres distance from Deventer is associated with a 6-percentage points reduction in the probability of a BCL house in a city. The F-tests for the first-stage regressions indicate that the instrument used in the model without controls (column 4) might not be strong enough for a causal interpretation of the second-stage estimate. After including controls possibly weak instrument concerns do no longer apply. The second-stage results in column (5), (7) and (9) only use the variation in the presence of a BCL house or in the number of BCL houses that is associated with the distance from Deventer. The IV estimates confirm the positive effect of one or more BCL houses on the literacy rate of a city.[29]

The estimates in Table 8 also suggest that the OLS estimates in the left columns are negatively biased and correlated with unobserved factors that reduce literacy in a city. Becker and Woessmann (2009) also find substantially higher 2SLS estimates in their analysis of the effect of Protestantism on literacy. The negative selection bias in their analysis seems to be related to the diffusion pattern of Protestantism towards poor areas with a more prevalent opposition to the Catholic establishment. Although the BCL did not vociferate against the Catholic establishment, BCL houses might have diffused in a similar way. It might have been easier and more attractive to set up a BCL house in cities where the Catholic influence was less strong. Due to the specific period of our investigation, it is difficult to empirically document this negative selection bias. The scarce data that are available about the developments before the BCL (see subsection 2.3, Table 5) show that the diffusion of BCL houses was not associated with the presence of existing schools or with city growth before 1400. The strong increase in

[28] We also have information about female literacy. If we pool men and women, similar estimates are obtained. The estimates for the female sample show a positive but slightly smaller effect of BCL on literacy.

[29] An analysis for the pooled sample of males and females shows similar and statistically significant results. The estimation results are very similar in models in which the observations are weighted by the number of grooms from each city. This procedure might reduce bias by measurement error.

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the estimated effect might also be explained by the limitations of our literacy data from 1600. The data are based on marriage records of individuals who migrated to Amsterdam from 33 cities. If migration to Amsterdam was somehow linked to literacy and to the BCL, then, if literate individuals from BCL cities were more likely to migrate to Amsterdam, we would overestimate the effect of the BCL on literacy. Due to the obvious limitations of the historical literacy data, we believe that our estimation results should not be interpreted as clean evidence regarding the size of the effect of the BCL on human capital. Rather, these two sets of estimates for book production and literacy rates are consistent with the part of our mechanism that suggests that the BCL is likely to have facilitated human capital accumulation.

3.2. *The Effect of the BCL on City Growth*

Table 9 presents the effects of the BCL on economic development. In particular, we focus on city growth between 1400 and 1560 for our sample of 67 cities. In this period, the economy of the Netherlands seems to have entered a transition phase in which a higher level of development is attained by higher population growth.[30]

The regression analysis reveals a strong positive effect of the BCL on city growth. The OLS estimates in Table 9 suggest that the presence of the BCL increases city growth by approximately 35% points, with the exact impact depending on the specification. All

Table 9

OLS Estimates of the Relationship between the Brethren of the Common Life (BCL) and City Growth, 1400–1560 (Dependent Variable: Population Growth 1400–1560)

	Growth 1400–1560				
	OLS	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)
BCL	0.381***	0.347***		0.327***	
	(0.124)	(0.119)		(0.097)	
Number of BCL houses			0.071**		0.073***
			(0.027)		(0.026)
Log pop 1400	−0.122*	−0.099	−0.082	−0.092	−0.087
	(0.069)	(0.077)	(0.080)	(0.068)	(0.068)
Sea		0.380**	0.422**	0.104	0.139
		(0.154)	(0.161)	(0.145)	(0.148)
River		0.002	0.014	0.044	0.050
		(0.099)	(0.097)	(0.095)	(0.096)
Roman		−0.002	−0.002	−0.001	−0.001
		(0.002)	(0.002)	(0.002)	(0.002)
Constant	1.291**	1.106*	1.031*	0.995*	1.004*
	(0.510)	(0.582)	(0.610)	(0.510)	(0.520)
Observations	67	67	67	61	61
R-squared	0.132	0.262	0.209	0.177	0.127

Notes. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.10.

[30] See also Van Bavel and Van Zanden (2004). Galor and Weil (1999) and Galor (2010) have referred to such a transition as a post-Malthusian regime in which human capital translates into population growth.

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specifications control for initial size. We add the same geographical controls as above. Cities along the sea coast also seem to grow faster. Whether or not cities are located next to a main river or whether they are closer to Roman trading routes does not seem to matter for their growth in this period. When we use the number of BCL houses we also find a positive effect of BCL on city growth (see column 3). A concern with these estimates is that they might be driven by a small number of fast growing or deteriorating cities. Therefore, we re-estimated the full model for a sample that excluded cities that grew or shrank more than 100% in the period 1400–1560. The estimates in columns (4) and (5) for this sample of 61 cities are very similar to the previous estimates.

To establish a causal interpretation of the impact of the BCL on economic development further, we instrument the BCL with distance from Deventer. Table 10 reports the estimation results. The first-stage results in the odd numbered columns, along with the F-tests for the validity of the instrument, make us confident that the analysis is sensible. The 2SLS results in the even numbered columns confirm a positive and statistically significant effect of BCL on city growth. The estimates in columns (7)–(10) show that these results are not driven by a small number of fast growing or shrinking cities.[31]

Taken together the estimated co-efficients support a causal interpretation of the effect of the BCL on city growth in the Netherlands in the period 1400–1560. These estimates are consistent with the observation that the Netherlands experienced a wave of urbanisation before other European countries did (Bairoch, 1988), which has given them a head start. What our estimates add to these observations is an economic interpretation along with a mechanism of human capital accumulation.

4. Robustness

This Section reports a number of robustness checks and examines a number of possible alternative explanations.

4.1. *Placebo Tests of Instrumental Variable Identification*

In our main analysis, we instrument the BCL by distance from Deventer. There could be other developments explaining our results. For example, Haarlem is often cited as one of the first cities adopting the printing press (Dittmar, 2011). This could influence our results, particularly those on literacy rates and book production. Also, Utrecht and Amsterdam have been important religious and trading cities in Dutch history, which merits a closer look. In addition, three cities outside the main area of our analysis might have influenced developments in the area of the Netherlands we investigate: Antwerp as an important commercial centre, Mainz as the cradle of modern printing, which is located at the same river as Deventer, and Louvain as an intellectual and religious centre in medieval Europe.

[31] The population figures used in the estimation come from Lourens and Lucassen (1995) and Israel (2001). The results are very similar if we use data from Bairoch *et al.* (1988) to compute growth 1400–1600 for 16 cities and impute missing values with data from Lourens and Lucassen (1995).

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Table 10

2SLS Estimates of the Relationship Between the Brethren of the Common Life (BCL) and City Growth, 1400–1560 (Dependent Variable: Population Growth 1400–1560)

	BCL	Growth 1400–1560	BCL	Growth 1400–1560	BCL number of houses	Growth 1400–1560	BCL	Growth 1400–1560	BCL number of houses	Growth 1400–1560
	1st stage	2SLS	1st stage	2SLS	1st stage	2SLS	1st stage	2SLS	1st stage	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BCL		0.570*		0.565*				0.680**		
		(0.321)		(0.294)				(0.295)		
Number of BCL houses						0.152*				0.167**
						(0.084)				(0.081)
Dist. Deventer	−0.006***		−0.006***		−0.022***		−0.006***		−0.023***	
	(0.001)		(0.001)		(0.004)		(0.001)		(0.004)	
Log pop 1400	0.268***	−0.162	0.288***	−0.137	1.036***	−0.133	0.271***	−0.147	1.087***	−0.145
	(0.063)	(0.099)	(0.070)	(0.095)	(0.226)	(0.095)	(0.074)	(0.094)	(0.243)	(0.088)
Sea			0.052	0.353**	−0.253	0.421**	0.024	0.060	−0.332	0.132
			(0.118)	(0.151)	(0.381)	(0.159)	(0.137)	(0.141)	(0.451)	(0.144)
River			−0.033	−0.044	−0.048	−0.055	−0.015	−0.028	−0.066	−0.028
			(0.132)	(0.110)	(0.424)	(0.109)	(0.135)	(0.118)	(0.446)	(0.104)
Roman			0.001	−0.002	0.006	−0.002	0.000	−0.000	0.007	−0.001
			(0.001)	(0.002)	(0.004)	(0.002)	(0.001)	(0.002)	(0.005)	(0.002)
Constant	−1.190**	1.537**	−1.332**	1.339*	−5.178***	1.375*	−1.232**	1.310*	−5.523***	1.395**
	(0.484)	(0.672)	(0.522)	(0.680)	(1.680)	(0.699)	(0.546)	(0.661)	(1.798)	(0.644)
Observations	67	67	67	67	67	67	61	61	61	61
F-test	29.81		24.23		32.10		19.67		30.07	
R-squared	0.393	0.100	0.400	0.223	0.466	0.146	0.384	0.028	0.466	

Notes. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, * p< 0.10.

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We have conducted a number of placebo tests in which we replace distance from Deventer with distance from Haarlem, Utrecht, Amsterdam, Antwerp, Mainz and Louvain. Table 11 reports the results of 2SLS estimates (first and second-stages and the F-tests for significance of the instrument) for book production, literacy rates and city growth. The first row copies the estimates for Deventer from the models reported in Table 7 columns (3) and (4) for book share, Table 8 columns (6) and (7) for literacy and Table 10 columns (3) and (4) for city growth. The next rows report the estimates of the placebo tests using the other cities as instruments.

We first discuss the effects of replacing distance from Deventer with distance from the three important Dutch cities. Most first-stage estimates for the Dutch cities produce too low values to merit a sound 2SLS analysis, with two exceptions. First, distance from Utrecht is related to the book share. However, distance from Utrecht does not seem to matter for the other three outcomes. Second, distance from Haarlem is related to literacy but has the wrong sign.

Distance from Antwerp and Louvain seems to be important for book production and city growth. However, the first-stage estimates for these cities are positive, which suggests that an increase in the distance from Antwerp or Louvain increases the probability of the presence of a BCL house. Increasing the distance from these cities in a northern direction is equivalent to decreasing the distance from Deventer, which probably explains the first and second-stage results.

In conclusion, we believe that developments in other important cities of that time are unlikely to yield a convincing alternative explanation for the early development of the Netherlands.

4.2. *The Influence of the Hanseatic League*

The Hanseatic League was an association of merchant guilds and their cities that traded along the coast of Northern Europe. The League started in the 1150s in Lübeck and expanded from the Baltic to the North Sea, including the Netherlands. The League was centred on the Baltic Sea. Dutch cities also participated in the League or had trading contacts with the member cities. Before 1400, the Dutch cities that were involved in these activities were located along the rivers in the eastern and northern part of the Netherlands and also included trading cities in the western part of the country. For instance, Zierikzee, Middelburg, Dordrecht, Den Briel and Amsterdam were involved in the war between the Hanseatic League and Waldemar IV, the King of Denmark, and Zierikzee and Amsterdam had trading privileges with Baltic cities (Weststrate, 2000). During the fifteenth century, the cities in the west of the Netherlands gradually became more independent, and became competitors instead of members of the League. Historical research suggests that the influence of the League was different from the influence of the BCL. The main reason is that the impact of the League on the development of the Dutch economy was limited. The League was strong in Scandinavia, the Baltic and the northern parts of Germany. The trade networks in the Netherlands were already established before the League became important (Slechte, 2010; Schulte Beerbühl, 2011).

The analysis in subsection 2.1 showed a negative association between our instrument and the Hanseatic League. In this subsection, we investigate whether the League biases

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Table 11

Placebo Tests of Instrumental Variable Identification

	Book share (specification as in Table 7, columns (3) and (4))			Literacy (specification as in Table 8, columns (6) and (7))			City growth (specification as in Table 10, columns (3) and (4))		
	1st stage	F-test	2nd stage	1st stage	F-test	2nd stage	1st stage	F-test	2nd stage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Deventer	−0.008***	54.00	0.024	−0.006***	9.79	0.290***	−0.006***	24.23	0.565*
	(0.001)		(0.015)	(0.002)		(0.090)	(0.001)		(0.294)
Haarlem	−0.003	1.56	0.083	0.028	11.70	0.188***	−0.002	1.35	1.547
	(0.002)		(0.054)	(0.008)		(0.068)	(0.002)		(1.617)
Utrecht	−0.006***	15.05	0.058***	−0.005	1.48	0.624	−0.004*	2.96	0.626
	(0.002)		(0.019)	(0.004)		(0.491)	(0.002)		(0.568)
Amsterdam	−0.005***	5.71	0.059**	−0.001	0.20	0.045	−0.004**	4.37	1.106
	(0.002)		(0.023)	(0.002)		(0.389)	(0.002)		(0.683)
Antwerp	0.005***	24.60	0.025*	0.001	0.02	3.914	0.004***	11.29	1.297***
	(0.001)		(0.013)	(0.002)		(27.407)	(0.001)		(0.383)
Louvain	0.006***	28.41	0.032**	−0.001	0.31	1.272	0.005***	15.68	1.167***
	(0.001)		(0.014)	(0.002)		(2.322)	(0.001)		(0.337)
Mainz	0.003*	2.56	0.080*	−0.003*	3.50	0.495**	0.002	0.98	1.367
	(0.002)		(0.045)	(0.002)		(0.214)	(0.002)		(1.521)

Notes. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.10.

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Table 12

Re-Estimation of the Main Models with Hanseatic Trade (Hanse) as a Control Variable

	Book share	Book share	City growth	City growth	Literacy	Literacy
	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Hanse	−0.010	−0.011	−0.016	−0.088	0.051	−0.028
	(0.007)	(0.007)	(0.135)	(0.161)	(0.039)	(0.085)
BCL	0.020**	0.027*	0.352***	0.613*	0.043*	0.315**
	(0.009)	(0.014)	(0.117)	(0.332)	(0.025)	(0.139)
Log pop 1400	0.006	0.005	−0.099	−0.138	−0.005	−0.038
	(0.005)	(0.005)	(0.076)	(0.097)	(0.017)	(0.047)
Sea	−0.007	−0.008	0.381**	0.356**		
	(0.009)	(0.009)	(0.151)	(0.151)		
River	0.007	0.007	0.006	−0.024		
	(0.015)	(0.015)	(0.113)	(0.121)		
Roman	0.000	0.000	−0.002	−0.001		
	(0.000)	(0.000)	(0.002)	(0.002)		
Dis. Amsterdam					−0.000	0.000
					(0.001)	(0.001)
Constant	−0.049	−0.044	1.099*	1.331*	0.675***	0.773**
	(0.034)	(0.036)	(0.578)	(0.685)	(0.144)	(0.316)
Observations	66	66	67	67	33	33
R-squared	0.262	0.250	0.262	0.209	0.145	

Notes. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.10.

our estimates. Three Dutch cities were full members of the League (Deventer, Kampen and Groningen) and several other cities had trading communities or trading rights linked with the League.[32] We construct a dummy variable, which takes the value one if a city is a member or was involved in Hanseatic Trade. As the organisation and structure of the League was diffuse it remains unclear whether more Dutch cities should be included and whether these activities should be classified as pre-1400 or post-1400 (Weststrate, 2000).

In Table 12, we show the results of our main models after including the dummy variable. The first two columns show the OLS and IV estimates for city growth, columns (3) and (4) for book production and columns (5) and (6) for literacy. We find that the estimates of the effect of the BCL on all three outcomes are very similar to the results in the previous subsection. In addition, the Hanseactic trade dummy is insignificant in all models. The results do not change when we use the number of BCL houses instead of the presence of the BCL.

4.3. *Extending the Geographical Area*

The BCL also established houses in Germany and Belgium. We use the presence of the BCL to extend the geographical area of our analysis of economic growth. We have information for German regions (Niedersachsen, North-Rhine Westphalia and

[32] Amsterdam, Arnhem, Bolsward, Brielle, Doesburg, Dordrecht, Harlingen, Hasselt, Middelburg, Nijmegen, Oldenzaal, Roermond, Tiel, Zierikzee, Zutphen and Zwolle.

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Table 13

Brethren of the Common Life (BCL) and City Growth Including the Hinterland of the Netherlands

	Growth 1400–1560	Growth 1400–1560	BCL	Growth 1400–1560
	OLS	OLS	1st stage	2SLS
	(1)	(2)	(3)	(4)
BCL	0.417***	0.370***		0.424**
	(0.113)	(0.104)		(0.176)
Dist. Deventer			−0.004***	
			(0.001)	
Log pop 1400	−0.257***	−0.222***	0.323***	−0.230***
	(0.053)	(0.058)	(0.047)	(0.060)
Sea		0.410***	0.125	0.403***
		(0.151)	(0.102)	(0.151)
River		0.095	0.005	0.091
		(0.119)	(0.098)	(0.121)
Roman		−0.000	0.001	−0.000
		(0.001)	(0.001)	(0.001)
Constant	2.348***	1.963***	−1.794***	2.013***
	(0.422)	(0.454)	(0.352)	(0.464)
Observations	91	91	91	91
F-test			42.27	
R-squared	0.267	0.352	0.425	0.350

Notes. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.10.

Rhineland-Palatinate) and for Belgium as a whole. This increases the number of observations from 67 to 91. One important caveat applies. The population information for Germany is collected from Bairoch *et al.* (1988), who only included relatively large cities. BCL establishments were also present in relatively smaller cities.

Table 13 presents the estimates for a sample of 91 cities, which is equivalent to the estimates in Tables 9 and 10. The OLS estimates in columns (1) and (2) are consistent with the estimates in Table 9 and reveal a positive effect of the BCL on city growth in the period 1400–1560. In addition, the 2SLS approach, documented in columns (3) and (4), is also in line with the estimates presented in Table 10.

4.4. *The Legacy*

Our estimates show a long-lasting effect of the BCL on human capital and economic development. However, from the mid-seventeenth century onwards, the rise of the Dutch Republic and the delayed spread of the Reformation led to the extinction of the BCL and the Modern Devotion movement in general. The virtues of Modern Devotion became widespread and the economy did not benefit from the direct presence of the BCL anymore. In addition, the BCL more or less discontinued in 1568 when Pius V forced monastic rules upon the BCL. At the same time the ideas of the Reformation led to unrest in the BCL community, which weakened its societal influence. The educational benefits of the BCL are documented in Figure 3 in which we observe the difference between education levels in the Netherlands and Germany until at least

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1800. The strong economic development during the Dutch Golden Age from about 1580 onwards is well documented (Israel, 1995).

Table 14 reports a set of OLS estimates in which we explain literacy rates in 1860 by the BCL and a set of 2SLS estimates in which we instrument the BCL by distance from Deventer. It is the same regression as the one reported in Table 8, but now for the full set of 67 cities. The OLS estimates in the columns (1)–(4) suggest no direct effect of the BCL on literacy in 1860. The other covariates produce plausible results in their relation to literacy. Also the 2SLS estimates, reported in columns (5)–(8), do not yield any significant causal effect of the BCL on literacy in 1860. What we do observe in this set of regressions is that the share of Protestants in the population has a positive effect on education. This is consistent with the findings of Becker and Woessmann (2009) for Germany for the same time period. We interpret these findings as a strong effect of the BCL in the take off of education but no further BCL role in boosting education in more modern times (i.e. around the mid-nineteenth century).

Finally, Table 15 reports a set of OLS estimates in which we explain city growth up to 1795. The specifications are similar to the ones reported in Tables 9 and 10, except for the dependent variable which is now growth between 1400 and 1795. The estimated co-efficients have the same sign compared to those presented above. However, the effect of the BCL is no longer statistically significant. Also the 2SLS estimates – reported in columns (4) and (6) – do not yield any significant coefficients, suggesting that the causal effect of the BCL on economic development is especially strong immediately after its foundation and diffusion.[33]

5. Conclusion

This study investigates the legacy of the BCL on economic outcomes in the Netherlands. After the founding of the BCL by Geert Groote in Deventer in the late fourteenth century, the movement positively contributed to human capital formation and economic development in the Netherlands. Many historians have laid emphasis on the importance of the BCL for the development of Christian humanism in Europe. In addition, others have related the BCL to early urbanisation in the Netherlands and high levels of human capital. Hence, the BCL is likely to have contributed to the early development of the Netherlands.

An important contribution of our analysis is that it is the first to document the importance of the BCL for economic development directly. While informative, previous studies about the late medieval period in the Netherlands are limited in their ability to capture economic developments directly, making them difficult to use for identifying the causal factors that generated human capital. We provide a mechanism through which the BCL has influenced human capital formation by describing their activities in book production, educating young citizens and institutionalising education. In addition, we show how the BCL has contributed to city growth.

[33] In addition, the effect of BCL reduces towards zero if we focus on the period 1560–1795. This is consistent with the evidence documented in Acemoglu *et al.* (2005). They argue that sea-going trade from 1600 onwards (when the Dutch East India Company was established in Amsterdam) altered economic development in the Netherlands.

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Table 14

The Impact of the Brethren of the Common Life (BCL) on Literacy in 1860 (Dependent Variable: Male Literacy Rates in 1860)

	Literacy 1860	Literacy 1860	Literacy 1860	Literacy 1860	BCL	Literacy 1860	BCL	Literacy 1860
	OLS	OLS	OLS	OLS	1st stage	2SLS	1st stage	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BCL	0.031	0.032	0.024	−0.003		0.048		0.026
	(0.021)	(0.022)	(0.021)	(0.020)		(0.052)		(0.056)
Dist. Deventer					−0.005***		−0.005***	
					(0.001)		(0.001)	
Share of Protestants				0.118***			0.637***	0.096
				(0.044)			(0.187)	(0.065)
Log pop 1400		−0.003	−0.000	0.003			0.269***	−0.002
		(0.0144)	(0.015)	(0.014)			(0.065)	(0.016)
Sea			0.107***	0.081***			−0.100	0.082***
			(0.026)	(0.026)			(0.118)	(0.027)
River			0.077***	0.063**			−0.118	0.061**
			(0.029)	(0.029)			(0.124)	(0.029)
Roman			0.001**	0.000			−0.001	0.000
			(0.000)	(0.000)			(0.001)	(0.000)
Constant	0.850***	0.873***	0.769***	0.722***	0.818***	0.844***	−1.413***	0.757***
	(0.0165)	(0.1133)	(0.118)	(0.119)	(0.122)	(0.023)	(0.482)	(0.131)
Observations	67	67	67	67	67	67	67	67
F-test					18.49		23.34	
R-squared	0.023	0.024	0.279	0.348	0.221	0.016	0.498	0.334

Notes. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.10.

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Table 15

The Direct Impact of the Brethren of the Common Life (BCL) on Population Growth, 1400–1795 (Dependent Variable: Population Growth 1400–1795)

	Growth 1400–1795	Growth 1400–1795	BCL	Growth 1400–1795	BCL	Growth 1400–1795
	OLS	OLS	1st stage	2SLS	1st stage	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
BCL	0.328	0.304		0.416		0.534
	(0.224)	(0.225)		(0.495)		(0.496)
Dist. Deventer			−0.006***		−0.006***	
			(0.001)		(0.001)	
Log pop 1400	−0.141	−0.073	0.268***	−0.159	0.288***	−0.114
	(0.115)	(0.134)	(0.063)	(0.152)	(0.070)	(0.156)
Sea		0.744**			0.052	0.715**
		(0.301)			(0.118)	(0.304)
River		−0.075			−0.033	−0.123
		(0.173)			(0.132)	(0.185)
Roman		−0.002			0.001	−0.002
		(0.003)			(0.001)	(0.003)
Constant	1.729**	1.121	−1.190**	1.843*	−1.332**	1.368
	(0.865)	(1.008)	(0.484)	(1.043)	(0.522)	(1.105)
Observations	67	67	67	67	67	67
F-test			29.81		24.23	
R-squared	0.034	0.193	0.393	0.032	0.400	0.179

Notes. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.10.

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Our second main contribution is to establish the impact of the BCL on economic outcomes empirically. In particular, we report estimates that suggest an effect of the BCL on book production and early literacy in the Netherlands in the sixteenth century. We also find evidence of stronger city growth in cities where BCL houses had been established.

Overall our mechanism and empirical evidence shows that the BCL has most likely been an important factor fostering the early development of the Netherlands. This research offers an explanation for why the Netherlands was the first country on the rise in the development of Europe by filling the time gap of about 200 years of European economic history.

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Accepted: 19 June 2014

Additional Supporting Information may be found in the online version of this article:

Appendix A. Data Sources and Construction of Variables.
Data S1.

References

Acemoglu, D., Johnson, S. and Robinson, J. (2005). 'The rise of Europe: Atlantic trade, institutional change, and economic growth', *American Economic Review*, vol. 95(3), pp. 546–79.
Akçomak, I.S., Webbink, D. and Ter Weel, B. (2013). 'Why did the Netherlands develop so early: the legacy of the Brethren of the common life', CPB Discussion Paper 228, available at. http://www.cpb.nl/en/publication/why-did-netherlands-develop-so-early-legacy-brethren common-life (last accessed: 20 October 2014).
Allen, R.C. (2003). 'Progress and poverty in early modern Europe', *Economic History Review*, vol. 56(3), pp. 403–43.
Bairoch, P. (1988). *Cities and Economic Development*, Chicago, IL: University of Chicago Press.
Bairoch, P., Batou, J. and Chèvre, P. (1988). *The Population of European Cities, 800–1850*, Geneva: Librairie Droz.
Barnebeck Andersen, T., Bentzen, J.S., Dalgaard, C.-J. and Sharp, P.R. (2013). 'Pre-reformation roots of the protestant ethic', Working Paper 137, Centre for Competitive Advantage in the Global Economy, Department of Economics, University of Warwick.
Barro, R.J. and McCleary, R.M. (2005). 'Which countries have state religions', *Quarterly Journal of Economics*, vol. 120(4), pp. 1331–70.
Baten, J. and Van Zanden, J.L. (2008). 'Book production and the onset of modern economic growth', *Journal of Economic Growth*, vol. 13(3), pp. 217–35.
Becker, S.O. and Woessmann, L. (2009). 'Was Weber wrong? A human capital theory of protestant economic history', *Quarterly Journal of Economics*, vol. 124(2), pp. 531–96.
Blockmans, W.P. (1993). 'De Vorming van een Politieke Unie (Veertiende-Zestiende Eeuw)', in (J.C.H. Blom and E. Lamberts, eds.), *Geschiedenis van de Nederlanden*, pp. 46–113, Baarn: HB Uitgevers.
Blom, J.C.H. and Lamberts, E. (1993). *Geschiedenis van de Nederlanden*. Baarn: HB Uitgevers.
Botticini, M. and Eckstein, Z. (2007). 'From farmers to merchants, conversions and diaspora: human capital and Jewish history', *Journal of the European Economic Association*, vol. 5(5), pp. 885–926.
Boucekkine, R., Peeters, D. and De la Croix, D. (2007). 'Early literacy achievements, population density, and the transition to modern growth', *Journal of the European Economic Association*, vol. 5(1), pp. 183–226.
Braudel, F. (1979). *Civilisation, Economie et Capitalisme*, Paris: Armand Colin.

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Buringh, E. and Van Zanden, J.L. (2009). 'Charting the 'rise of the west': manuscripts and printed books in Europe, a long-term perspective from the sixth through eighteenth centuries', *Journal of Economic History*, vol. 69(2), pp. 409–45.
Cantoni, D. (2012). 'Adopting a new religion: the case of Protestantism in 16th century Germany', Economic Journal, vol. 122(560), pp. 502–31.
Cantoni, D. and Yuchtman, N. (2014). 'Medieval universities, legal institutions, and the commercial revolution', *Quarterly Journal of Economics*, vol. 129(2), pp. 823–87.
Cipolla, C. (1969). *Literacy and Development in the West*, London: Penguin Books.
Congleton, R.D. (2008). 'America's neglected debt to the Dutch, an institutional perspective', *Constitutional Political Economy*, vol. 19(1), pp. 35–60.
De Vries, J. (1976). *The Economy of Europe in an Age of Crisis, 1600–1750*, Cambridge: Cambridge University Press.
De Vries, J. (1984). *European Urbanization, 1500–1800*, Cambridge, MA: Harvard University Press.
De Vries, J. and Van der Woude, A. (1997). *The First Modern Economy: Success, Failure, and Perseverance of the Dutch Economy, 1500–1815*, Cambridge: Cambridge University Press.
DeLong, J.B. and Shleifer, A. (1993). 'Princes and merchants: European city growth before the industrial revolution', *Journal of Law and Economics*, vol. 36(2), pp. 671–702.
Dittmar, J. (2011). 'Information technology and economic change: the impact of the printing press', *Quarterly Journal of Economics*, vol. 126(3), pp. 1133–72.
Fuller, R. (1995). *The Brotherhood of the Common Life and His Influence*, New York: State University of New York Press.
Galor, O. (2010). 'The 2008 Klein lecture: "Comparative economic development: insights from unified growth theory"', *International Economic Review*, vol. 51(1), pp. 1–44.
Galor, O. (2011). 'Inequality, human capital formation and the process of development', in (E.A. Hanushek, S.J. Machin and L. Woessmann, eds.), *Handbook of the Economics of Education*, pp. 441–93, Amsterdam: North Holland.
Galor, O. and Moav, O. (2006). 'Das human kapital: a theory of the demise of the class structure', *Review of Economics Studies*, vol. 73(1), pp. 85–117.
Galor, O. and Weil, D.N. (1999). 'From Malthusian stagnation to modern growth', *American Economic Review*, vol. 89(2), pp. 150–4.
Gem, S.H. (1907). *Hidden Saints*, A Study of the Brothers of the Common Life, Oxford: Society for Promoting Christian Knowledge.
Glaeser, E.L. and Glendon, S. (1998). 'Incentive, predestination and free will', *Economic Inquiry*, vol. 36(3), pp. 429–43.
Goldin, C. and Katz, L.F. (1998). 'The origins and technology-skill complementarity', *Quarterly Journal of Economics*, vol. 113(2), pp. 693–732.
Goldin, C. and Katz, L.F. (2008). *The Race Between Education and Technology*, Cambridge, MA: Harvard University Press.
Hart, S. (1976). *Geschrift en Getal*, Bloemendaal: Amicitia.
Haselden, R.B. (1939). 'A scribe and printer in the fifteenth century', *Huntington Library Quarterly*, vol. 2(2), pp. 205–11.
Henkel, J.S. (1968). 'School organizational patterns of the Brethren of the Common Life', in (K.A. Strand, ed.), *Essays on the Northern Renaissance*, pp. 35–50, Ann Arbor, MI: Ann Arbor Publishers.
Hyma, A. (1924). *The Christian Renaissance: A History of the Devotia Moderna*, Whitefish, MT: Kessinger Publishing.
Hyma, A. (1950). *The Brethren of the Common Life*, Grand Rapids, MI: Wm. B. Eerdmans Publishing Company.
Hyma, A. (1951). *Renaissance to Reformation*, Grand Rapids, MI: Wm. B. Eerdmans Publishing Company.
Hyma, A. (1968). 'Introduction: the "Devotia Moderna" and the humanists', in (K.A. Strand, ed.), *Essays on the Northern Renaissance*, pp. 9–31, Ann Arbor, MI: Ann Arbor Publishers.
Israel, J.I. (1995). *The Dutch Republic. Its Rise, Greatness, and Fall 1477–1806*, Oxford: Claredon Press.
Israel, J.I. (2001). *De Republiek: 1477–1806*, Franeker: Van Wijnen.
Kaptein, H.J.M. (1998). *De Hollandse Textielnijverheid, 1350–1600: Conjunctuur en Continuïteit*, Hilversum: Uitgeverij Verloren.
Kienzle, B.M. (2000). *The Sermon*, Turnhout: Brepols Publishers.
King, S. (1992). 'The sisters of the common life at Deventer, 1374–1418: a new beginning?', *Mystics Quarterly*, vol. 18(4), pp. 120–30.
Knotter, A. and Van Zanden, J.L. (1987). 'Immigration and labor market in amsterdam in the seventeenth century', *Tijdschrift voor Sociale Geschiedenis*, vol. 13(4), pp. 403–28.
Koorn, F.W.J. (1992). 'Hollandse nuchterheid? De houding van de moderne devotie tegenover vrouwen-mystiek en ascese', *Ons Geestelijk Erf*, vol. 66(1), pp. 97–114.
Kuijpers, E. (1997). 'Lezen en schrijven: onderzoek naar het alfabetiseringsniveau in zeventiende-eeuws Amsterdam', *Tijdschrift voor Sociale Geschiedenis*, vol. 23(4), pp. 490–522.
Laurie, S.S. (1896). 'The Renaissance and the school, 1440–1580', *The School Review*, vol. 4(3), pp. 140–8.

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Leibell, J.F. (1924). 'The church and the humanism', *Catholic Historical Review*, vol. 10(3), pp. 331–52.
Lem, C.A.M. (1991). 'De consuetudines van het collatiehuis in Gouda', *Ons Geestelijk Erf*, vol. 65(2–3), pp. 125–43.
Lesger, C. (2006). 'Information streams and origin of migrants to the Netherlands in the early modern period', *Tijdschrift voor Sociale en Economische Geschiedenis*, vol. 3(1), pp. 3–23.
Lourens, P. and Lucassen, J. (1995). *Inwonertallen van Nederlandse Steden, ca. 1300–1800*, Amsterdam: NEHA.
McCarrel, F. (1934). 'An abstract of the development of the training school', *Peabody Journal of Education*, vol. 11(5), pp. 212–5.
McCleary, R.M. and Barro, R.J. (2006). 'Religion and economy', *Journal of Economic Perspectives*, vol. 20(2), pp. 49–72.
Mertens, T. (1996). 'Collatio und codex im bereich der Devotio Moderna', in (D. Meier, D. Hüpper and H. Keller, eds.), *Der Codex im Gebrauch. Akten des Internationalen Kolloquiums*, pp. 163–82, Munich: Fink.
Parker, G. (1977). *The Dutch Revolt*, Ithaca, NY: Cornell University Press.
Pijper, F. (1914). 'De invloed van de Broeders des Gemeenen Levens op de schoolstichting van Calvijn', *Kerkhistorische Opstellen van het Gezelschap*, pp. 116–7.
Post, R.R. (1954). *Scholen en Ondewijs in Nederland Gedurende de Middeleeuwen*, Utrecht: Uitgeverij Het Spectrum.
Post, R.R. (1968). *The Modern Devotion. Confrontation with Reformation and Humanism*, Leiden: E.J. Brill.
Scheepsma, W.F. (1997). *Deemoed en Devotie*, Amsterdam: Prometheus.
Schoeck, R.J. (1988). *Erasmus Grandescens: The Growth of a Humanist's Mind and Spirituality*, Nieuwkoop: De Graaf.
Schulte Beerbühl, M. (2011). *Das Netzwerk der Hanse*, Mainz: Institute of European History.
Slechte, H. (2010). *Geschiedenis van Deventer: Oorsprong en Middeleeuwen*, Zutphen: Walburg Pers.
Sokoloff, K.L. and Engerman, S.L. (2000). 'History lessons: institutions, factor endowments, and paths of development in the new world', *Journal of Economic Perspectives*, vol. 14(3), pp. 217–32.
Strand, K.A. (1968). 'The Brethren of the Common Life and fifteenth-century printing', in (K.A. Strand, ed.), *Essays on the Northern Renaissance*, pp. 51–64, Ann Arbor, MI: Ann Arbor Publishers.
Unger, R.W. (1978). *Dutch Shipbuilding before 1800: Ships and Guilds*, Assen: Van Gorcum.
Unger, R.W. (2001). *A History of Brewing in Holland, 900–1900: Economy, Technology and the State*, Leiden: Brill Academic Publishers.
Van Bavel, B.J.P. (2002). 'People and land: rural population developments and property structures in the low countries, *c.*1300–*c.*1600', *Continuity and Change*, vol. 17(1), pp. 9–37.
Van Bavel, B.J.P. and Van Zanden, J.L. (2004). 'The jump-start of the Holland economy during the late-medieval crisis, c.1350–c.1500', *Economic History Review*, vol. 57(3), pp. 503–32.
Van Beek, L. (2009). *Leken Trekken tot Gods Woord: Dirc van Herxen (1381–1457) en zijn Eerste Collatieboek*, Middeleeuwse Studies en Bronnen, Hilversum: Verloren.
Van der Wee, H. (1971). 'The economy as a factor in the revolt of the Southern Netherlands', *Acta Historiae Neerlandica*, vol. 5, pp. 52–67.
Van Engen, J. (2008). *Sisters and Brothers of the Common Life. The Devotia Moderna and the World of the Late Middle Ages*, Philadelphia, PI: University of Pennsylvania Press.
Van Zanden, J.L. (1993). *The Rise and Decline of Holland's Economy*, Manchester: University of Manchester Press.
Weststrate, J. (2000). 'Organization and structure of the Hanse 1300–1450', *Leidschrift*, vol. 15(2), pp. 21–47.

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