Causes and Consequences of the Protestant Reformation*

Sascha O. Becker†
University of Warwick

Steven Pfaff‡
University of Washington

Jared Rubin§
Chapman University

The Protestant Reformation is one of the defining events of the last millennium. Nearly 500 years after the Reformation, its causes and consequences have seen a renewed interest in the social sciences. Research in economics, sociology, and political science increasingly uses detailed individual-level, city-level, and regional-level data to identify drivers of the adoption of the Reformation, its diffusion pattern, and its socioeconomic consequences. This survey takes stock of the research so far, tries to point out what we know and what we do not know, and which are the most promising areas for future research.

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† Department of Economics, University of Warwick, Coventry CV4 7AL, United Kingdom; s.o.becker@warwick.ac.uk. Becker is also affiliated with Ifo, CESifo, CEPR, and IZA.

‡ Department of Sociology, University of Washington; pfaff@uw.edu.

§ Argyros School of Business & Economics, Chapman University; jrubin@chapman.edu

Though Protestantism had begun as a strictly religious reform movement, the people behind the new economic forces seized the Reformation and bent it to their own economic needs. […] As the modes of production changed, the people responsible for these changes searched for a state that would legalize what they were doing and for a religion that would sanctify it. They adopted the Protestant religion and made it embrace the capitalist state. The two went hand in hand like bride and groom."

(Max I. Dimont, *Jews, God and History*, 1962)

The Protestant Reformation was one of the most far-reaching events of the last millennium. It ended the millennium-old hegemony of the Catholic Church in Western Europe and altered political and economic fortunes wherever it reached. It continues to fascinate social scientists for several reasons beyond its upcoming 500-year anniversary (with 2017 officially being designated the "Lutherjahr" in Germany). First, the economic consequences of the Reformation are of wide-ranging importance for debates concerning the long-run persistence of Western economic growth as well as for our understanding of comparative economic development. Second, the role of economic development and innovations in communications technology and media in instigating change in the Reformation has broader comparative implications. Third, the case of the Reformation is an important example of institutional change, the causes and effects of which are areas of importance in economics as well as political science and sociology.

Our survey persuades us that recent research on the causes and consequences of the Reformation has greatly improved over past scholarship. For one, there is far greater attention to causal assessment than was the case in the past. We attribute much of this to the use of econometric methods and its emphasis on causal identification, a marked improvement over descriptive approaches and inference based on correlations. However, many of the studies of the long-term consequences of the Reformation outside of economics use comparative case-based methods. Although these often allow for narrative methods of causal discernment, their external validity is more suspect. In addition, while sociological studies would generally benefit from the adoption of econometric methods, economic studies might benefit from greater contextualization and attention to qualitative evidence, particularly in the selection and justification of instrumental variables.

Mixed-method designs are making important strides in improving the validity of comparative and historical social science and may help improve the state of the art in research on the Reformation.

In the past, the dialogue between the field of history and the social sciences was greater than it is today. Pioneering social historians such as R.W. Scribner (1987, 1994), Heinz Schilling (1986, 1988) and Bernd Moeller (1972) urged scholars to understand the Reformation not only in theological or cultural terms but also in economic and sociological terms. Scribner (1986) went so far as to endorse large-*N* studies and multivariate analysis on the causes of the Reformation, complaining that historiography had proven too unsystematic and biased by endogeneity and selection issues to offer compelling general explanations.

After the decline of social science history, few historians had either the interest or the training to contribute to systematic work on the causes and consequences of the Reformation. Whereas previous historians were interested in seeking general patterns and causal statements about the Reformation and were open to social science methods (such as Schilling and Scribner), the "cultural turn" in history in recent decades has largely terminated this dialogue. Instead, nearly all of the recent contributions to a general understanding of the Reformation's causes and consequences based on systematic analysis of data have come from the social sciences. The long shadow of the Weber thesis is one reason why economic historians have made the most extensive contribution to the new understanding of the Reformation, but political scientists and sociologists are also making important contributions. While some social scientists are primarily interested in explaining the Reformation discretely, many are interested in understanding general processes and mechanisms operating within that case or the general implications of the Reformation for economic, political, and legal institutions in the contemporary world.

The Reformation has led to insights into broader questions in the social sciences due primarily to the confluence of newly digitized data from the Reformation period combined with an increased emphasis within economics on identification of causal effects. The latter affects Reformation research because the Holy Roman Empire (hereafter, HRE) provides a fantastic historical opportunity to identify causes – especially of economic and political phenomena – due to its decentralization and heterogeneity. In other words, some of the recent research is not interested in the Reformation per se, but exploits the fact that the Reformation was a major event that just so happened to take place in a region where economic identification is possible. As a result, the HRE has seen a broad resurgence in economics research outside of the Reformation.

Besides the fact that the "shock" of the Reformation helps identification of causal effects, in other fields (political science, sociology) the heterogeneity, political decentralization, and dynamism of the HRE have also drawn interest because they offer comparative leverage across times and places within a single case. Germany is also advantageous for its comprehensive scholarly traditions and good record keeping that made important studies of the antecedents, causal dynamics, and long-run consequences of the Reformation possible. Social scientists have made use of comprehensive lists of monastic establishments, university enrollments, shrines, printing presses, and other features of late medieval German life that historians carefully assembled. Without this impressive stock of secondary materials, the hurdles obstructing large-*N* multivariate studies would have been immense.

This survey summarizes the social science research on the religious economy of Western Europe at the time of Luther and the causes and consequences of the Reformation. We divide the literature focusing on the causes of the Reformation into supply-side and demand-side factors, although numerous studies emphasize both. Many of these studies have benefited from the newly digitized data from the early modern HRE. These data have allowed for advanced econometric studies that would have been unthinkable a mere two decades ago. The literature on the consequences of the Reformation shows a variety of short- and long-run effects, including Protestant-Catholic differences in human capital, economic development, competition in media markets, political economy, and anti-Semitism, among others. For historical and pragmatic reasons, these studies tend to go beyond the boundaries of Central Europe more than studies of the causes of the Reformation.

It is just as important to note what this analytic survey does not intend to accomplish. First, it is not a historiographical essay and thus does not review the very broad and accomplished historical literature on the Reformation that is primarily narrative in its method and principally concerned with description. Whereas a number of useful essays on the historiography of the Reformation already exist and many more will doubtlessly appear in connection with the upcoming anniversary of 1517, an analytic review of the social scientific literature on the Reformation has not yet appeared. Second, it is concerned with works on the Reformation that have been produced by scholars working within the disciplinary boundaries of economics, political science, and sociology that are intended to yield general explanation. Third, it occupies itself largely with literature related to the causes of institutional change and the effects of religious institutions on economic and

political development, rather than cross-national studies on the association between different religions and democracy or economic growth, such as Barro and McCleary (2003).

We structure the remainder of the paper as follows. Section I briefly overviews the intellectual background of social scientific research on the Reformation, beginning with the famous Weber-Tawney thesis. Section II summarizes recent social science contributions on the religious economy of late medieval Catholicism and the causes of the Reformation, and Section III reviews the literature on its long-run economic, political, and social consequences. Section IV concludes and points to gaps in the literature.

I. The Origins of Reformation Studies in the Social Sciences: Weber and Tawney Revisited

In an extended essay composed in 1904 and 1905, the polymath Max Weber attempted to deepen understanding of the cultural forces that made possible the Industrial Revolution. Throughout his career, Weber was interested in explaining why self-sustaining economic growth and organizational rationalization had first occurred in Western Europe. The resulting essay, "The Protestant Ethic and the Spirit of Capitalism", was in many regards a response to what he saw as the one-sidedly materialist understanding of economic history promoted by political economy. The slim book has a nuanced argument and the evidence given for it is largely anecdotal. Hence, it allows for several interpretations. However, the most important of them for our discussion is that Protestant ideas about work and wealth accumulation influenced European societies by changing values and orientations toward profit-seeking activities. Whereas Luther attacked the special status of the clergy and contributed the idea of secular vocations being equally God pleasing, the great contribution to the capitalist spirit came from Calvin's theology. Confronting the psychological tension created by the Calvinist notion of double predestination, the Puritans developed "worldly asceticism", the combination of repudiation of consumption alongside this-worldly economic activity to produce the material evidence of divine election that believers desperately sought. Although sectarian Calvinists were a minority group, their influence diffused through their successful entrepreneurialism and helped to ignite the capitalist takeoff in northwestern Europe. Over time, Protestant ideas secularized, informing the cultural materialism and economic rationalism at the heart of industrial capitalism. Weber claimed that the cultural dispositions that came out of the Reformation not only explained why some societies were far more developed than others but also explained patterns of education and social stratification in early 20th century Europe.

Weber himself recognized the limitation of his thesis and in his later work toward a general economic history, reduced Protestantism to one cause among many. Nevertheless, the Weber thesis proved influential, not least because it appeared to offer a corrective to Marxism and, with modifications, a host of scholars took it up. However, in 1926 the English economist R.H. Tawney pointed out historical inconsistencies in Weber's account. Tawney's most damning critique was that important capitalist institutions such as banking and long-distance credit preceded the Reformation. In his survey of late medieval economic history, Tawney found no shortage of entrepreneurial energy and observed that, "it seems a little artificial to talk as though capitalist enterprise could not appear till religious changes had produced a capitalist spirit." His survey revealed that modern capitalism took root in the 15th century in Italy, southern Germany, and Flanders. Nevertheless, Tawney described his perspective as being indebted to Weber, even though he saw the cultural issue relevant to the Industrial Revolution being the greater self-confidence and sense of expediency that the English and Dutch commercial classes brought to religion, politics, and economy in the 17th century.

Tawney's was not the last word on the Weber thesis, nor did it prevent it from remaining influential in the social sciences. Since Tawney there have been numerous studies taking up the Weber thesis, but one of the most impressive and forceful criticisms was made by Swedish economic historian Kurt Samuelsson ([1957] 1993). His foundational criticism disputed three basic claims of the Weber thesis that have occupied subsequent lines of social-scientific inquiry: that the practices of modern capitalism preceded the Reformation; that Weber misunderstood and exaggerated the influence of Puritanism; and that capitalism did not require worldly asceticism. Like Tawney, Samuelsson argued that there is abundant evidence that capitalism had already taken firm root prior to the 16th century. He attacked Weber's historical generalizations and his use of empirical evidence, showing that he misstated the supposed advantage that 19th century Protestants enjoyed in income and education. Samuelsson claimed that Calvinists were far more ambivalent toward capitalist ethics than Weber allowed. Finally, he claimed that Protestant thriftiness could not account for sufficient accumulation to have made a difference in capitalist breakthrough.[1]

[1] Marx (1995) famously dismissed the idea of a "so-called primitive accumulation" by which "the diligent, intelligent, and, above all, frugal elite" accumulated enough wealth to seed the growth of the capitalist mode of production. Rather, he emphasized colonial plunder that increased the supply of specie and institutional changes that transformed early-modern workers into wage-laborers.

More recently, McCloskey (2010) made a forceful rhetorical case against the Weber thesis that echoes Tawney. For McCloskey, it is innovation, not accumulation, which explains the capitalist breakthrough in the West. It is less the putative frugality and vocational ethics of the Reformation than a new rhetoric of "unbounded innovation" which emerged during this era that provided the political force and moral justification for industrial capitalism. In this sense, Protestantism may have been important by furnishing a new language and a new sense of confidence among the bourgeoisies of Northwestern Europe.

Recent econometric studies also echo Samuelson's repudiation of the Weber thesis. After testing its ability to explain levels of 19th-century European industrialization, Delacroix and Nielsen (2001) dismiss it as a "beloved myth" of the social sciences. Akçomak, Webbink and ter Weel (2015) cast doubt on the Weber thesis by investigating the case of the Netherlands. They argue that the Dutch were already on the path to modern capitalism without Protestantism. By the middle of the 16th century, literacy rates in the Netherlands were greater than in neighboring regions. These developments, in turn, promoted greater economic development and vibrant publishing activity that created the tensions that eventually erupted into open rebellion. They explain the advanced development of the Netherlands as resulting from late-14th century religious innovations that originated in Deventer and increased popular piety by improving literacy. Regression analyses which include an instrument for distance to Deventer support their claim and suggest why the Netherlands developed early and later became Protestant in spite of firm Habsburg repression.

Another recent historical study casting doubt on the Weber thesis is Andersen, Bentzen, Dalgaard, and Sharp's (2015) paper on the pre-Reformation origins of the work ethic that Weber attributed to Protestantism. They argue that the puritanical Cistercian monastic order promoted values championing work and frugality centuries before Luther and Calvin. More importantly, Cistercians contributed to long-term development by improving local productivity. Employing a comprehensive list of Cistercian houses in England, they demonstrate a positive association between monasteries and population growth over several centuries. An instrumental variable analysis backs their causal claim between Cistercians and growth and supplementary analysis shows that an association between Cistercians and growth persists in contemporary Europe.

In short, while social scientists of different stripes seem to agree that cultural and religious change may well have been a factor in the emergence of modern capitalism, they differ sharply on what role Protestantism played. Nevertheless, beyond the endless permutations of the Weber debate,

a fundamental question largely overlooked until recently is: why did Europe have its Reformation at all?

II. Causes of the Reformation

Perhaps the most surprising aspect of the Reformation was that it spread beyond Wittenberg in the first place. The issue was largely a supply-side one: the problem for would-be reformers was that the Church crushed any attempts at reform – describing them as "heresies" worthy of severe punishment – before they spread. One of the earliest of these reform attempts, the Waldensian movement of the 12th and 13th centuries, rejected open displays of wealth among churchmen. They gained a following in France, Spain, and Italy, but the Church and its secular allies brutally suppressed them wherever their influence grew too large. Ultimately, the Church enacted a decree of death by burning against Waldensians at the Council of Gerona in 1197. Their 15th-century successors, the Lollards, met a similar fate. The Lollards spread the ideas of John Wyclif (d. 1384), a theologian whose rhetoric blasted avaricious clergy while seeking a return to the Scriptures as the center force of Christianity. The most serious challenge to the Church came from the Prague preacher Jan Hus (c. 1372-1415), who led the Bohemian Hussite movement of the early-15th century. He too spoke against the sinful nature of Churchmen and the avaricious nature of Church practices – including the selling of indulgences – and he yearned for a return to the biblical origins of the Church. His movement spread throughout Bohemia (Czech Republic) in the early-15th century, but the emperor and pope violently suppressed it before it could spread further. For his role, the Church had Hus burned at the stake in 1415.[2]

These pre-Reformation movements against Church power and wealth suggest that some form of pent-up demand for reform existed for at least a couple of centuries prior to 1517. Hence, it is unlikely that the Reformation was solely the result of some rapid shift in demand. Although some accounts stress a latent popular rejection of the Roman Church that made conditions ripe for the Protestant rebellion, other scholars take a different view. At best, they view demand as a necessary but insufficient cause of the Reformation. Indeed, the eminent historian Robert W. Scribner (2001) said of research on the Reformation, "the question therefore becomes one of strategic individuals, of leaders and militants, because there was no mass support for the Reformation, per se." Most

[2] Tawney (1926) and Stark (2003) summarize these developments.

historians think that religious motivations combined with political and economic grievances to fuel the rebellion against the Church. While there certainly was spontaneous enthusiasm for Luther in the first few years after 1517, this support did not necessarily result in the institution of Protestantism in the cities and territories of Central Europe. For one thing, enthusiasm for Luther's "Evangelical" movement was much more general than the triumph of reform. For another, in the cities where reform prevailed, it did so because Protestant agitators convinced guildsmen and burghers to reject the Catholic monopoly based on religious ideas, anti-clericalism, urban politics, and civic interests (Blickle 1992; Brady 1998; Moeller 1972). For their part, be it because of their own convictions or perceived interests, the territorial princes sometimes rejected Protestantism or instituted a Protestant church in spite of popular will. For these reasons, a large portion of the recent literature on the causes of the Reformation focuses on supply-side changes: either institutional or technological changes that permitted the Reformation to spread more rapidly or events that limited the ability of the Church and its political allies to stop its spread.

II.1. The Religious Economy of Western Europe on the eve of the Reformation

In the last three decades, political economy has done much to shed new light on the comparative and historical study of religion. One of the central contributions of the religious economies theory is to treat religious groups as firms that compete for consumers in a market (Iannaccone 1994, 1998; McCleary 2011; Stark and Finke 2000). Religious firms are producers that depend on their adherents for revenue, trading goods and services in exchange for member contributions. Much of the research on religious economies has explored the effects of competition, whether by examining how pluralism influences the vitality of religious groups or by the role played by the state as a regulator of religious markets. In a pluralist religious market, firms compete with each other to service potential and current adherents, adopting a variety of market models depending on their product lines (Iannaccone 1995). Scholars have worked to integrate both supply- and demand-side factors and to explain religious behavior as well as organizations (Ekelund, Hébert, and Tollison 2006; Montgomery 2003; McBride 2008; McCleary 2011).

Across times and places, a common strategy adopted by dominant firms to maximize revenues is eliminating the competition by setting up a religious monopoly, which becomes the only officially permitted source of spiritual goods. Here we are referring to a true monopoly situation, not merely one in which a single firm enjoys market dominance. A true religious monopolist

benefits from an *incontestable market* that protects the monopolist from rivals offering superior products or lower prices. Such monopolies, like that enjoyed by the medieval Roman Catholic Church in Western Europe, do not emerge spontaneously. They rely heavily on secular power – the state – to guarantee their unrivaled market position (Gill 1998; Stark and Iannaccone 1994). Where a close relationship exists between rulers and religious monopolies, the obstacles confronting upstart firms are daunting. In the case of medieval Europe, the Catholic monopoly was strongest where backed by the power of princely or civil authorities that actively enforced orthodox claims, sanctioned ex-communicants, and punished heretics.

In spite of their advantages, incumbent monopolists commanding incontestable markets may have sources of vulnerability. First, economic growth may serve as a demand-shifter by creating a more differentiated population with more diverse spiritual demands. As income improves, the focus of demand for religion may shift from material security and supernatural assistance to transcendence and concern for the soul (Weber 1963). Rising income boosts consumption power, increasing the opportunity costs both of time spent in religious devotion and of moral restrictions on behavior and secular consumption. Hence, religious monopolies tend to be more robust in societies characterized by slow economic growth, concentrated ownership, and widespread poverty (Ekelund, Hébert and Tollison 2006; Norris and Inglehart 2004).

Second, religious monopolists are prone to rent-seeking and poor performance (Iannaccone 1998; Smith 1986; Gill 1998). This is a serious vulnerability because spiritual goods are credence goods whose quality (e.g., the promise of salvation) cannot be readily empirically determined. Consequently, reputation matters when adherents assess the claims of religious firms. Rent-seeking innovations, clerical neglect and corruption are endogenous features of monopoly religious institutions that can undercut their self-enforcing properties by undermining the credibility of beliefs (Ekelund, Hébert, Tollison, 2006; Hull and Bold 1989; Iannaccone 1998). This, in turn, creates demand for new or reformed religious ideas into the religious marketplace. If an upstart firm can enter it, it may be able to exploit a rapid shift in religious demand at the expense of the incumbent monopolist whose credibility as a supplier of spiritual goods has suffered.

Given these pressures, incumbent monopolists erect barriers to the entry of rival firms. Established religious monopolies may command so much institutional power and benefit from so many privileges that rivals face nearly insurmountable barriers to entry (Miller 2002; Stark and Iannaccone 1994). For instance, enforcing orthodox teaching, legally forbidding rivals, and treating

heresy or apostasy as a criminal offense all deter competitors in an established monopoly. Ekelund, Hébert, and Tollison (2006) note that established religious organizations construct monumental temples and other religious edifices that express their market dominance. The commanding size of temple structures may serve as a signaling device used to deter heretics from daring to challenge the incumbent monopolist. In addition, their resources may allow incumbent monopolists to employ welfare and social benefits to increase the population's dependence on them, narrowing the opportunities for rival firms. Conversely, when dominant firms fail to address the welfare of their adherents, they provide their rivals with an opportunity to offer a fuller range of material and spiritual goods and thereby win a niche in the market, as Stark (1996) shows for early Christianity in the Roman Empire.

Finally, religious firms seek the backing of secular political power. Rulers often find in an established religion a valuable partner who can lower the cost of rule by convincing subjects that their regime is divinely ordained (North 1981, chapter 5). Gill (1998) proposes that where rulers are relatively weak and insecure while the established clergy is strong, it can extract favorable concessions including legal enforcement of monopoly privileges, subsidies, tax exemptions, commercial monopolies and even territories.[3] However, as states grow stronger, rulers may extract concessions of their own, such as exempting political elites from tithes and other religious obligations and forcing established religions to surrender administrative autonomy (e.g., the right to appoint bishops) or a portion of religious revenues to the state. Upstart religious firms (such as Protestantism) may offer rulers a tempting alternative -- depose the incumbent monopoly, thereby legitimating the state at a lower cost and permitting the expropriation of monopoly assets.

Does the stylized depiction of a well-entrenched religious monopolist facing supply and demand-side vulnerabilities match the historical image of the Roman Church on the eve of Luther's rebellion? One might see the coming of the Reformation in light of a barely suppressed latent demand for religious innovations that a corrupt and relatively enfeebled monopolist could only struggle in vain to suppress. Certainly, this was the depiction of Central Europe before the Reformation favored by earlier generations of (generally Protestant) church historians. Although there is much to support this understanding, the contemporary understanding is that the Catholic Church was in some regards vital, well entrenched, and served the needs of its diverse flock.

[3] The Roman Church of the late Middle Ages not only possessed the Papal States but ruled a host of ecclesiastical domains governed by prince-bishops and abbots across the HRE as well.

In order to remain the incumbent monopolist, the Roman Church had to maintain its exclusive claim to the provision of salvation and prevent rivals from entering the religious marketplace (Ekelund, et al. 1996). Catholicism was most secure and cost-efficient where its customers were loyal and its institutions were self-enforcing. Self-enforcement relied on the Church being widely understood as having the only route to eternal salvation. Many of the features of the late medieval Church such as mendicant monastic orders, clerical vows of poverty and chastity, the cult of the saints, and the distribution of charity appear to have increased the credibility of the Church's claims and contributed to its self-enforcing monopoly. Despite the problems of corruption and venality, the late medieval Church in many places strove to meet the needs of adherents and attracted popular support (Cameron 2012; Duffy 2005; Scribner 2001; Taylor 2002). The Church offered a rich culture of the sacred with abundant opportunities for this-world experience and sacramental participation. Some of these practices appear to have helped to create deep connections between the Church and the people by making them direct beneficiaries of charity or by involving them in pilgrimages and popular veneration of saints.

Nevertheless, there were inherent tensions created by monopoly status that undercut performance, bred contempt for the clergy, and created incentives for the Church to over-exploit its consumers. Simony – the sin of buying and selling matters spiritual – was a widespread and detested practice of the late medieval church. The people especially resented the so-called "seculars" – the non-cloistered clergy – for their putative corruption. In fact, the Catholic system of sanctification was rife with venality and eventually provoked a crisis in the struggle over the extension of rent-seeking innovations like the doctrines of purgatory, auricular confession, and indulgence (Ekelund et al. 1996; Richardson 2005). Luther's *Ninety-five Theses* were a reaction by the young theologian to new efforts by Leo X to raise revenues by selling indulgences from sin not only on behalf of the living but also on behalf of the dead.

Expanding trade and economic development in the 15th and early 16th centuries may have made it difficult for the Church to meet the changing demand of wealthier consumers. Popular Catholicism became inadequate, or even objectionable, to the increasingly literate townsmen. In its efforts to exploit popular piety, they regarded the Church as too tolerant of "superstition" and of overly emotional religious practices that lacked Scriptural foundations and seemed to dabble in the realm of the magical. For decades before Luther, pious burghers were increasingly attracted to rival theologies and practices that were critical of the clergy and at greater tension with popular religion,

such as lay orders, religious confraternities, and Catholic pietism (such as the *devotio moderna*). Given this kind of estrangement from Roman Catholicism, it is little wonder that some pious townsmen, as well as the practically minded, would have responded to an opportunity to displace predatory, rent-seeking clerics while winning for themselves greater liberty from traditional economic strictures. Although historians long explained that this is why the Reformation gained such traction in the cities, other scholars claim that demand for greater piety could be satisfied without rebelling against Rome. Wealthier townsmen were able to produce satisfying religious goods through preaching foundations and other endowments. University study also expanded enormously in the decades before 1517. Both trends addressed supply-side vulnerabilities by producing better-trained clergy, a flourishing of Humanism, and improved Biblical literacy that might have satisfied middle-class demand (Akçomak, Webbink and ter Weel 2015; Taylor 2002).

To secure its monopoly, the late medieval Church employed substantial entry-control mechanisms. In the late medieval world, Catholic power was most obvious in its organizational capacity to enforce orthodoxy. In the 13th century, the Church established a specialized mendicant order, the Dominicans, charged with preaching, identifying the wayward, punishing heresy, and asserting theological orthodoxy. Recruited and trained at the universities, Dominican friars occupied prominent faculty positions and in many places assisted in carrying out the Inquisition (Ames 2009). As the religious crisis sparked by Luther began, Dominicans were expected to "proclaim true Doctrine" and "take the field" against the Protestants (Hinnenbusch 1975). Nevertheless, the Dominican order increasingly found itself hindered in its effectiveness, not least by a reputation that suffered for being compelled to defend the most odious practices of the Church. Mendicant orders also answered directly to the Pope, earning them resentment from townsmen for being outside of local control.

It was not until the convocation of the Council of Trent (1545), which launched the Counter-Reformation, that the defenders of orthodoxy were effectively coordinated and benefited from a coherent strategy to suppress the rising Protestant movement. Before this, Catholic counter-movements failed to publicize a consistent set of anti-Protestant ideas, published most of their propaganda in Latin, and relied heavily on the political support of local princes and urban magistrates to suppress Protestant heretics (Bagchi 1991; Edwards 1994). Outside of territories ruled by prince-bishops, by the Habsburgs, or by sympathetic territorial lords, the Church could not rely on secular powers to crush the Protestant insurgency. In 1546, when Emperor Charles V

belatedly invaded Germany with a papal mandate to restore "the holy Christian faith, and the unity of the same with sword and armed hand against the heretics", he failed to consolidate his battlefield victory over the Protestants. A rebellion of the German princes (including his erstwhile allies) against his monarchial ambitions overturned the settlement he had imposed and by 1552 sent Charles fleeing into Italy (Olson, 2011).

This stemmed from the fact that the political context for an attack on the Catholic monopoly was more favorable in the HRE than in other parts of Europe. The HRE was a confederal, elective monarchy in which the competing incentives of emperor and princes and political decentralization made it much harder for the Church to coordinate protection of its monopoly than in more unified kingdoms. Sovereignty was effectively fragmented and delegated to principalities and sovereign towns, limiting the emperor's power outside his own domains (Kohler 1990; Neuhaus 1997; Nexon 2009). Whereas the Habsburg emperor and his proxies were committed to the defense of the Church and restoration of its monopoly position, the extent of their power outside their own domains was limited and depended on the cooperation of princes and urban magistrates who frequently sought to undermine their ambitions. Frederick the Wise (1463-1525), the Saxon prince who served as Luther's patron and protector, is a famous example of the difficulties the Church faced in gaining concerted political support against the Protestants. Although Frederick appears to have remained piously Catholic (and amassed an enormous collection of holy relics), he was motivated to support Luther by the desire to reduce the papal revenues collected in his domain, to frustrate Habsburg ambitions, and by rivalry with other princely houses in the empire.

If political support was uncertain, particularly in the HRE, the Church had substantial organizational resources of its own that could bolster its position against the Protestants. Monasticism was one. By the time of the Reformation, urban monastic houses had become wealthy and often controlled sizable shares of local real estate. Although the tax exemptions and other privileges which monasteries enjoyed were frequently the focus of anti-clerical agitation (Scribner 1986; Ekelund et al 1996), monasteries also provided townsmen with important sources of employment and demand for consumer goods. In addition to spiritual succor, the Church was the principal provider of welfare services. In effect, the Church charged its well-off adherents high prices for salvation and redistributed a portion of the proceeds to the poor in the form of alms and other charity. Altogether, the Church may have redistributed up to a third of its revenues to the poor through charity and related welfare services (Ekelund et al. 2006; Kahl 2005). Monastic

communities established hospitals, hospices, and kitchens to aid the urban poor. In some towns it has been estimated that as much as half of the population was dependent on Catholic assistance on the eve of the Reformation (Southern 1990).

The historical picture of the robustness of the Catholic monopoly in the early 16th century is thus a mixed one: the Roman Church was resourceful and well entrenched but, particularly in Central Europe, had substantial liabilities and political vulnerabilities. The key task facing social scientists who want to understand the Reformation is to move beyond broad generalizations and macro-level trends, on the one hand, and, on the other, descriptions of particular towns and regions. For them, the question becomes, in the face of a general Protestant rebellion that very swiftly took off in the decade after 1517 why did the Catholic monopoly remain in place in some locations while being overturned in others? Why did some of the likely candidates for the Reformation – from the perspective of the literature – remain Catholic while seemingly inhospitable cities and regions saw Protestants triumph? As Ekelund et al. observe, most demand-side theories over-predict the incidence of the overthrowing of the Catholic monopoly (Ekelund, Hébert, and Tollison 2006). So what explains Protestant success *and* failure?

II.2. Supply-side Channels of the Reformation

Among the most influential insights by historians is that the Reformation was an "urban event", possibly caused by the rise of the Free imperial cities in the HRE (Dickens 1972; Ozment 1975).[4] There is some evidence to support this assertion: 50 of the 65 free imperial cities either permanently or periodically accepted the Reformation (Ozment 1975). There are many reasons why cities provided useful breeding grounds for reform ideas: urbanites lived in close proximity to each other, they had greater levels of wealth, literary awareness, and political sophistication, and cities permitted a greater degree of Protestant infiltration than the closed, autocratic regimes of the princes.[5] Yet, a potential problem with the "urban event" hypothesis is that "urban" correlates with other supply-side channels that were also important for the spread of the Reformation. Recent data-driven papers by economic historians and sociologists have sought to parse out these channels.

[4] Free and Imperial Cities or Free imperial cities for short, were self-ruling cities that enjoyed a certain amount of autonomy and were subordinate only to the emperor, as opposed to territorial cities or towns that were subordinate to a territorial prince.

[5] We should note, however, that free cities do not appear to have had political institutions conducive to long-term growth, as shown by Stasavage (2014).

Rubin (2014) tests the role that the printing press played in the spread of the Reformation. Rubin is hardly the first to suggest that the printing press played a key role in the spread of the Reformation; historian Bernd Moeller (1979) puts it simply: "No printing, no Reformation." Even Martin Luther himself noted that the printing press was "God's highest and ultimate gift of grace by which He would have His Gospel carried forward."[6] The connection between printing and the Reformation is straightforward. The reformers made great use of printed propaganda, and in an age of high transport costs, having access to a printing press increased access to Reformation ideology, which spread through re-printing rather than shipping printed works. While it is true that literate circles were limited, most texts included woodcut illustrations that quite vividly expressed Reformation themes, and the spoken word often magnified the power of printing in that itinerant preachers frequently drew on Protestant pamphlets (Edwards 1994; Hanneman 1975; Scribner 1984).

Rubin collected a host of city-level variables from 16th-century Europe and found that cities that had a press by 1500 were significantly more likely to adopt the Reformation. Yet, omitted variable bias likely affects Rubin's initial results: towns with greater pre-press literacy were probably more likely to have a press, and they may have been less likely to adopt the Reformation (due to the presence of churchmen, who made up a sizable portion of the literate population). Rubin addresses this issue by instrumenting for the spread of printing with the city's distance to Mainz, the birthplace of printing. Rubin's two-stage regressions show an even stronger effect of printing on the adoption of the Reformation.

The connection between the spread of printing and the Reformation finds further confirmation in Dittmar and Seabold (2015). They collect a large data set of city characteristics, the most important of which are thousands of German-speaking books and pamphlets published from 1454 to 1600. They scrape these printed works in order to determine the religious sympathies – Protestant or Catholic – of the author. Dittmar and Seabold suggest a novel mechanism connecting the press to the spread of the Reformation. They argue that there is a positive correlation between pre-Reformation competition among printers and Reformation adoption – ideas were more likely to freely flow due to competitive pressures in cities without print monopolies. They also find that pre-Reformation competition among printers was especially important in cities under the rule of princes

[6] For an excellent recent treatment of the role of printing in the Reformation, see Edwards (1994). Another excellent, though older, summary of Luther's use of the printed words is Holborn (1942).

(i.e., those that were not free cities), presumably because ideas flowed more freely in free cities even in the absence of competition.

Iyigun (2008, 2015) makes a supply-side argument focusing on the political economy of the Reformation. Iyigun's theory complements those based on the role of the printing press, as both argue for mechanisms that allowed the Reformation to become sufficiently entrenched to the point that is was impossible to contain. He argues that Ottoman incursions into Eastern and Central Europe – the Ottomans were eventually stopped at the gates of Vienna – diverted the resources of the HRE away from suppressing Protestants for just long enough for the Reformation to become sufficiently entrenched in Germany. He employs conflict data from 1451 to 1650 and shows a negative correlation between Ottoman-European military engagements and intra-European conflicts. The Ottomans therefore helped mitigate conflict between the Catholic Habsburgs and the early reformers as well as Protestants and Counter-Reformers in the late-16th and early-17th centuries. Iyigun (2015) takes the argument one step further, suggesting that the "one true God" doctrine of monotheistic faiths entailed that when people of different faiths came into contact, interfaith conflict would result (since only one side can be right), but intra-faith conflict – i.e., conflict between Christians – would be mitigated.

Cantoni (2012) shows yet another supply-side pathway through which the Reformation spread. In a data-driven study focusing on the adoption of the Reformation by the princes of the HRE, he finds that princes were much more likely to adopt the Reformation if their neighboring lord did the same. The intuition he proposes is that adopting the Reformation was risky for lords – especially given the Catholic sympathies of the Habsburgs, one of whom was emperor during Luther's time – and if powerful neighboring lords adopted the Reformation it mitigated some of this risk. On the one hand, Cantoni points to a demand-side factor for Reformation adoption, as he argues that it was the princes' demand that mattered in many parts of the HRE. On the other hand, his insight is not one of a sudden change in demand for reform, but instead is one of a change in the costs of reform. Cantoni's results also indicate why a city's distance to Wittenberg (Luther's intellectual home) is so strongly and negatively correlated with Reformation adoption, a key fact exploited by Becker, Woessmann, and others to instrument for Reformation adoption in subsequent centuries (see Section 3).

II.3. Demand-side Channels of the Reformation

A few recent works consider demand-side factors of the Reformation. Curuk and Smulders (2015) argue that the Church enabled local rulers to perpetuate economic inefficiencies by legitimizing their rule and insulating them from revolt. Therefore, they argue, those places with the most to gain (i.e., those with the greatest inefficiencies) were most likely to adopt the Reformation, which meant throwing the Church out of power and reducing those inefficiencies. Using a limited data set, they find that cities with high agricultural potential but low populations (i.e., cities underperforming their economic potential) were likely to adopt the Reformation.

Another demand-side theory put forth by Pfaff (2013) suggests that cities with ancient Catholic shrines to saints were less likely to adopt the Reformation. His study is unusual among the empirical papers on the Reformation by including a measure for specifically religious practices. Pfaff's insights build on Swanson (1967), who showed a correlation between different late medieval political regimes and the likelihood of adopting Protestantism. These regimes reflected differing emphases in the understanding of the role of God in the polity. In those regimes that favored an "immanent" understanding, society was both more hierarchical and more communally integrated through sacramental ritual. By contrast, the "transcendental" cultures were more individualistic and less hierarchical. Where the transcendental understanding predominated, the Reformation prevailed, cementing differences in the cultural constitution of societies that persisted for centuries (Swanson 1971, 1986). Such a theory seems almost unfalsifiable. What are the concrete indicators of differing cultural dispositions and communal organization? In considering the limits to Protestantism, Rothkrug (1980) posited that early Protestant inroads were resisted in areas where the cult of the saints was highly developed, such as in Flanders, the Rhineland, Bavaria, and Austria. His research found an "unexpected" negative correlation between the presence of shrines to local saints and the adoption of the Reformation. As is true of many historical studies, Swanson and Rothkrug's suffered from inconsistent units of analysis and reliance on bivariate correlations, leading Pfaff (2013) to test the cult of saints hypothesis on a sample of large 16th-century Central European cities. He finds that, net of common economic and political control variables, having shrines to local saints

significantly reduced a city's odds of adopting Protestantism, suggesting that integration into the Catholic social order through communal rituals was protective against Protestant contagion.[7]

Ekelund, Hébert, and Tollison (2002; 2006, ch. 5) put forward the theory that people who demanded spiritual services were put on the margin of defection from the Catholic Church by its increasingly monopolistic practices. This permitted rival "firms", such as Protestant churches, to enter into the religious-economy market and offer a less costly path to salvation. They suggest that demand for alternatives to the Church was particularly high in heterogeneous, emerging economic markets characterized by a less stable wealth distribution than the more homogenous rent-seeking societies. They test this assertion by showing that regions with primogeniture laws were less likely to adopt the Reformation. They claim that this is a good test of their theory because primogeniture laws restricted property rights and the entrepreneurial impulse. In later work, Ekelund, Hébert, and Tollison (2004; 2006, ch. 6) argue that the Counter-Reformation was akin to the type of response one would expect from a monopolist facing entry: through violence and nominal doctrinal alterations, it attempted to increase rivals' (i.e., Protestants) costs and lowered the price of its own good. The Counter-Reformation did not take shape as a coherent strategy until after 1545. The Catholic Church eventually made supply-side changes that bolstered its position, such as publishing of the translations of the authorized Vulgate Latin Bible into vernacular languages, improving the training of the clergy, and reforming and reinvigorating popular cults of the Virgin Mary, the saints, and the Sacred Heart.

Pfaff and Corcoran (2012) also tackle the question of why religious monopolies can fail, and like Ekelund, Hébert, and Tollison test their hypotheses on the Reformation. Using a much larger data set on German cities, they find that piety and the purse (demand), as well as the interests of princes and magistrates (supply), explain why cities choose to disestablish. For rulers, if the opportunity costs of continued cooperation with the Roman Church exceeded the benefits, they favored the reformers. They find far less support for Catholic market-entry barriers, reinforcing the impression that on the eve of the Reformation the Church was an enfeebled monopolist, but do find that the density of monasteries in a city decreased the odds of reform, suggesting that a city's dependence on charitable institutions bolstered the Church. On the demand side, they attempt to capture the influence of the contending Lutheran and Zwinglian wings of the early Protestant

[7] The Catholic Church responded to Protestant competition by canonizing more individuals (see Barro and McCleary, 2011).

movement by measuring a city's distance to either Wittenberg or Zurich, finding a strong negative association with the abolition of Catholicism. Ironically, those rulers that abolished the Catholic monopoly soon found themselves confronted with the tendency of Protestants to divide into rival churches and sects. The universal solution was to impose a new territorial church as a local religious monopoly with the prince as the supreme bishop.

Kim and Pfaff (2012) provide yet another explanation for the spread of the Reformation that has both supply-side and demand-side features. They argue that the spread of university students from Protestant strongholds (Wittenberg and Basel, the intellectual homes of Luther and Zwingli) and orthodox Catholic strongholds (Cologne and Louvain) had a significant impact on whether a town ultimately adopted the Reformation. Although a number of papers have found a negative relationship between distance measures from Reformation centers (e.g., Wittenberg, Zurich) or the birthplace of printing (Mainz), Kim and Pfaff argue that the spread of Protestantism also advanced because of relational diffusion. They show that ideologically mobilized students served as agents of religious contention by bridging the social distance between university centers and their hometowns. Their analysis includes a novel way to measure the influence of contending religious movements through university enrollments. An analysis of hundreds of towns in the HRE shows that the greater a city's exposure to heterodox ideology through city-to-university ties, the greater its odds of instituting the Reformation, net of controls and a measure of spatial diffusion. Links to leading orthodox universities decreased a city's odds of reform. Studies such as this and Cantoni's (2012) suggest that more can be done to specify the kind of relational ties through which novel ideas and social influence flowed in the diffusion of the Reformation.

Table 1 summarizes the various causes of the Reformation cited by the literature.

Table 1: Causes of the Reformation

Variable	Study	Direction of Association	Unit of observation	N	Period of observation	Statistical Support
Supply-Side Factors						
A. Information						
Printing	Rubin 2014	+	Cities in HRE	352	1530-1600	Yes
Printing competition	Dittmar and Seabold 2015	+	German-speaking cities	191	1454-1600	Yes
B. Political Economy						
Ottoman Incursions	Iyigun 2008	+	European conflicts	250	1450-1700	Yes
Political Autonomy	Cantoni 2012	+	Cities in HRE	249	1517-1600	Yes
	Pfaff and Corcoran 2012	+	Cities in HRE	218	1523-1545	Yes
	Rubin 2014	+	Cities in HRE	352	1530-1600	Yes
Aristocratic Patronage	Kim and Pfaff 2012	+	Cities in HRE	457	1523-1545	Yes
C. Diffusion						
Political influence by spatial diffusion: *proximity effect of neighbor's adoption*	Cantoni 2012	+	Territories and cities in HRE	370	1517-1600	Yes
Ideological influence by spatial diffusion: *distance to Wittenberg/Zurich/Basel*	Rubin 2014	-	Cities in HRE	352	1530-1600	Yes
	Pfaff and Corcoran 2012	-	Cities in HRE	218	1523-1545	Yes
	Curuk and Smulders 2015	-	Cities in HRE	66	1600	Yes
	Kim and Pfaff 2012	-	Cities in HRE	457	1523-1545	Yes
Ideological influence by spatial diffusion: *distance to Cologne/Louvain*	Kim and Pfaff 2012	+	Cities in HRE	457	1523-1545	Yes
Student enrollments to: *Wittenberg/Basel* (social diffusion)	Kim and Pfaff 2012	+	Cities in HRE	457	1523-1545	Yes
Student enrollments to: *Cologne/Louvain* (social diffusion)	Kim and Pfaff 2012	-	Cities in HRE	457	1523-1545	Yes
Demand-Side Factors						
Saints shrines	Pfaff 2013	-	Large cities in HRE	145	1517-1545	Yes
Primogeniture	Ekelund et al. 2002	-	European nations and territories	27	1524-1685	No
Agricultural potential	Curuk and Smulders 2015	+	Cities in HRE	66	1600	Yes
Bishopric	Rubin 2014	-	Cities in HRE	352	1530-1600	Yes
Monasteries	Curuk and Smulders 2015	-	Cities in HRE	66	1600	Yes

III. Consequences of the Reformation

The literature on the consequences of the Reformation covers a wide array of areas: institutions such as schools (and hence human capital accumulation), governance, economic development, media market competition, (work) ethic, anti-Semitism, and many more. These consequences largely affected economic and political development in Europe and its offshoots, and missionaries ultimately transported them around the world. We therefore begin this section by detailing the consequences of the Reformation in Europe. Recent research largely confirms the Weberian insight that the Reformation played an important role in Europe's economic and political trajectory, although for very different reasons than those espoused by Weber. Then we briefly look at how Protestant (and Catholic) missionaries transported Christianity outside Europe. Although missionary activity is not directly related to the Reformation, contrasting the differential success or failure of Protestant versus Catholic missionaries in different regions around the world is potentially insightful for our understanding of the role of "institutions" in economic development.

III.1. The Reformation and Human Capital

The nexus between religion and human capital is one of the most widely studied in the economics of religion (Iannaccone 1998; Iyer 2015). In the context of the Protestant Reformation, Becker and Woessmann (2009) argue that Luther was keen on getting all Christians to read the Bible.[8] A prerequisite for this, given low literacy rates around 1500, was to foster universal schooling in Protestant areas. Using data from all 452 counties in 1871 Prussia, Becker and Woessmann show higher literacy rates where Protestant shares were higher. In order to establish causality from Protestantism to literacy, they instrument for the spread of the Reformation using distance to Wittenberg, the birthplace of the Reformation. They show that distance to Wittenberg does not predict pre-Reformation differences in education and economic development, giving support to their claim that the Reformation affected human capital acquisition and not vice versa. Differences in literacy rates in 1871 across Protestant and Catholic areas explain the differences in economic development, measured proxies such as income tax revenues, and the share of the work force in manufacturing and services. To the extent that the Protestant lead in education might have arisen only after the Industrial Revolution, a Weberian explanation could still hold. However, Becker and

[8] See also Becker and Woessmann (2011) for a more detailed overview of some of the work discussed in this subsection.

Woessmann (2010) show that Protestantism led to more schooling as early as 1816, well before the Industrial Revolution in Prussia. They conclude that their findings are more consistent with a human capital theory of Protestant economic history than with a Protestant (work) ethic à la Max Weber.

In line with Luther's request "that every town also had a girls' school", many Protestant towns opened girls' schools alongside boys' schools.[9] Becker and Woessmann (2008) show Luther's desire for relative gender equality in education had long run effects. Their econometric analysis of data from the 1871 Prussian census indicates that Prussian counties with larger Protestant shares not only had higher literacy rates on average, but also a smaller gender gap in literacy. While increasing enforcement of compulsory schooling laws closed the gender education gap in elementary schooling, it persisted in university enrollment from 1908 (when women were first allowed to study) to until after WWII, where it was again smaller among Protestants than among Catholics.

Outside Germany, researchers have studied the long-run effects of the Reformation on education. Swiss Protestant reformers Huldrych Zwingli in Zurich and John Calvin in Geneva were equally keen to educate believers to allow them to read the Bible. Boppart, Falkinger, and Grossman (2014) use data from 19th-century Switzerland collected from pedagogical examinations of conscripts in the military service. The tests – aggregated at the district level for more than 160 districts – were compulsory for every male citizen. There were standardized test in reading, essay writing, mathematics (written and oral), as well as knowledge of Swiss history and constitution. Their data allow them to study whether Protestants only excelled in reading or also in other disciplines. While the Protestant lead was particularly large with respect to reading capabilities, they also find Protestants did better in other cognitive skills.

Boppart, Falkinger, Grossmann, Woitek, and Wüthrich (2013) analyze whether the effect of Protestantism on education varies with the degree of conservatism in the district. They measure conservatism with voting results of three historical federal referenda: on easing restrictions for civil marriage held in 1875, on the "Factory Law" which imposed work regulations including the prohibition of child labor in 1877, and on the re-introduction of the death penalty in 1879. They find that Protestantism is only beneficial for educational spending and for test results of military conscripts in 1875-1903 when coupled with a progressive milieu. In both papers, Boppart and co-

[9] Green (1979) shows this for the Electorate (*Kurfürstentum*) of Brandenburg based on parish visitation documents in the first decades after the Reformation.

authors use the minimum of the distance to Zurich and Geneva as an instrumental variable for the share of Protestants at the district level.

The studies of Becker and Woessmann and Boppart and co-authors suggest that there is some direct connection between Protestantism and human capital accumulation, at least in central Europe. These well-identified studies, particularly those of Becker and Woessmann, account for most possible avenues of spurious correlation. More research is necessary to test these connections outside of central Europe, although identification issues are more difficult to address – historically, there was less local variation in Catholic share and Protestant share of the population in the rest of Western Europe and its offshoots. Nevertheless, these studies suggest a possible mechanism connecting Protestantism to long run economic development that has nothing to do with Weber's Protestant "ethic".

III.2. The Reformation and the Protestant (Work) Ethic

While Becker and Woessmann (2009) argue that human capital is more convincing than Weber's Protestant ethic in explaining income differences between Protestant and Catholic regions in Prussia, other researchers look at outcomes that explicitly try to capture a Protestant (work) ethic. Spenkuch (2011) uses micro-data from the German socioeconomic panel, which shows longer work hours and higher earnings for Protestants in contemporary Germany. To address the potential endogenous spread and conversion to Protestantism, he exploits the fact that the geographic distribution of Catholics and Protestants today largely reflects that at the time of the Peace of Augsburg in 1555. At Augsburg, the Imperial Diet famously agreed on the principle of "whose rule, his religion" (*cuius regio, eius religio*) whereby local rulers decided the religious affiliation on behalf of their citizens. Spenkuch argues that Protestants do indeed work harder (i.e., longer hours) than Catholics, suggesting that there may be some credence to Weber's "Protestant ethic" hypothesis after all.

Schaltegger and Torgler (2010) also directly tackle the Weberian hypothesis by exploiting individual-level data from the European Values Survey (EVS). This survey asks respondent to agree or disagree with the statement: "Work should always come first, even if it means less spare time." They find that education has a statistically significant impact on work ethic for Protestants but not for Catholics. Similarly, respondents that self-identify as being religious have a stronger work ethic only if they are Protestant. This result seems to indicate that Protestantism has an additional effect

on work ethic beyond that of education. However, these results do not use an IV strategy and thus do not necessarily have a causal interpretation.

Basten and Betz (2013) address the Weber hypothesis using data from Switzerland. They concentrate on the area in western Switzerland that is comprised of the present day cantons of Vaud and Fribourg. This area split in two prior to the Reformation. The city republic of Fribourg came to rule the Eastern part, whereas the Western part fell to the city Republic of Berne. During the Reformation, the Fribourg part remained Catholic and the Berne part adopted the new faith. Using a regression-discontinuity design and votes in federal referenda during the late 20th century, they show that Protestantism reduces referenda voting for more leisure by 14 percentage points, redistribution by 5 percentage points, and government intervention by 7 percentage points.[10]

van Hoorn and Maseland (2013) take a different approach to testing Weber's Protestant work ethic hypothesis. They test whether unemployment negatively affects well-being of Protestants more strongly than that of Catholics. Using data on 150,000 respondents from the European and World Values Surveys (EVS and WVS), they find that Protestants' satisfaction drops more when unemployed and that unemployment lowers satisfaction more in Protestant societies. Hayward and Kemmelmeier (2011) use data from the WVS to analyze whether Protestants have more pro-market attitudes. They attempt to shed light on the relative importance of "cultural Protestantism" at the national level versus individual-level religiosity. They find that those living in nations with a dominantly Protestant cultural history had more pro-market economic attitudes.[11] At the individual level, they find that Protestants had relatively pro-market attitudes regardless of religiosity. Both of these studies do not attempt to establish causality.

III.3. The Reformation and Economic Development

The economic advantages Protestants held over Catholics are the basis for Weber's Protestant ethic hypothesis. Becker and Woessmann (2009) confirm Weber's casual observation, documenting that Protestant areas were indeed better off in Weber's homeland of Prussia in the late 19th century.

[10] Siroky, Mueller, and Hechter (2016) suggest that this split plays a role in modern politics, too. In a 2013 referendum, the people of Jura Bernois (a French Protestant region loyal to German Protestant Berne) voted against joining the predominantly French but Catholic canton of Jura. They suggest that religious legacies were the salient deciding factor, dominating even common language.

[11] At the same time, cross-country regressions in Stulz and Williamson (2003) show that Catholic countries protect the rights of creditors less well than Protestant countries.

Protestant economic advantages over Catholics extended to numerous domains including income tax receipts, the share of the work force in manufacturing and services, and teacher incomes.

Cantoni (2015) gathered data from 272 cities in the Holy Roman Empire during the years 1300-1900 to try to determine whether Protestant advantages persisted in the very long run. Using city growth as a proxy for economic growth – a reasonable assumption in the pre-modern context – he finds no effects of Protestantism on economic growth. This finding coincides with that of Becker and Woessmann (2009) when they restrict their analysis to city counties only. However, the vast majority of the population before 1900 lived in rural areas, so using both urban and rural areas gives a more complete picture.

Young (2009) addresses the relationship between Protestantism and growth with Maddison's GDP data from 1500 to 2000. He shows that Protestant countries overtook the leading Catholic countries in the centuries following the Reformation, and the income gap showed no signs of convergence until the 1960s. While this paper is largely descriptive, it is one of the few studies to employ cross-country data from 1500 through the present to study the relative performance of Protestant and Catholic countries. The findings by Young (2009) contrast with those of Delacroix and Nielsen (2001), who concentrate on the development of industrial capitalism in European countries in the mid- to late-19th century, finding little association between Protestant population share and more than a dozen economic indicators. Comparing particular cases, they point to overwhelmingly Protestant countries that were notable laggards in capitalist development (the Nordic countries) and overwhelmingly Catholic countries that were early developers (Belgium, France). Even in the prosperous and religiously mixed case of Switzerland, they observe no pattern between religion and development in the 19th century.

Nunziata and Rocco (2014, 2015) look at the relationship between religion and entrepreneurship. Nunziata and Rocco (2014) employ individual-level data from the European Social Survey (ESS) from the 2000s to study the nexus between being a religious minority in a European region and rates of entrepreneurship. Their hypothesis is that religious minorities should have stronger adhesion to their confession's principles and – if Weber is right – Protestants should be more entrepreneurial than Catholics. They find that Protestants in Catholic-dominated regions are 5 percentage points more likely to be entrepreneurs than Catholics in Protestant-dominated areas. In Nunziata and Rocco (2015), they look at individual-level and district-level data from

Switzerland and come to similar conclusions. Minority Protestants in Switzerland are about 4 percentage points more likely to be entrepreneurs than minority Catholics.

Arruñada (2010) proposes another twist on the Weberian hypothesis, suggesting that the distinguishing feature of Protestantism was its social ethic. He argues that Reformers were more supportive of political and legal institutions than Catholics, often because they needed political support in their fight against Catholicism. He also suggests that Reformers placed less emphasis on the role of the family and instead wanted Christians to treat strangers equally well. He employs evidence based on cross-country survey data from the International Social Survey Programme (ISSP). His results are consistent with the idea that Protestantism is conducive to capitalist economic development, not by the direct psychological route of the Weberian work ethic but rather by promoting an alternative social ethic that facilitates impersonal trade.

The above-cited papers focus on the long-run effects of the Reformation, seeking to understand differences that arose centuries after the Reformation. This is understandable, since data from the 19th and 20th centuries are much better and much more widely available than data from the 16th century. Fewer studies have sought to understand the shorter-run effects of the Reformation on economic outcomes. One exception is Cantoni, Dittmar, and Yuchtman (2015), who are interested in how the Reformation affected the choice of majors for university students in the immediate aftermath of the Reformation. They argue that the closure of monasteries created uncertainty over future employability with a degree in theology. Their data suggest that as a result young men switched away from theology to other degrees such as law.

III.4. The Reformation and Governance

Politics was one area where the Reformation had an immediate and obvious impact. Where the Reformation took hold, the ruling elite evicted the Church from power. This fundamentally altered the makeup of city councils, parliaments, and royal councils. Rubin (2016) argues that the Reformation was therefore the culmination of a long divergence in the coalitions that propagated rule in Western Europe and the Middle East. Following the Reformation, Protestant rulers could no longer depend on the religious elite for legitimacy and thus turned to parliaments to support their rule and provide them with revenue. Rubin makes the case that parliaments generally had interests more aligned with long run economic development than the religious elite, and this helps explain why England and the Dutch Republic took off soon after their Reformations but Catholic Spain and

the Muslim Ottoman Empire lagged behind in spite of their military and territorial dominance. Greif and Rubin (2015) also use the concept of legitimizing agents to shed light on the role that religion played in the English Civil Wars of the 1640s and the Glorious Revolution. They argue that the key change in England's governance arose during the Reformation, when Henry VIII relied on Parliament to instill the Reformation. They contend that the legitimacy principle that emerged during the Tudor period from the aftermath of the Reformation was that the monarch followed the laws imposed by Parliament and in return received legitimacy and resources. Their theoretical model, data, and historical narrative suggest that the Civil Wars and Glorious Revolution resulted from attempts by the Stuart monarchs to revert to the old legitimacy principal of a monarch ruling by Divine Right, which meant a much smaller role for Parliament in governance.

Philpott (2000) also argues that the Reformation transformed the political order of Europe, although he suggests a different channel than Greif and Rubin. According to Philpott, Reformation ideas and the wars of religion determined the state system that emanated from the Westphalian Peace in 1648. The Augsburg Peace of 1555, with its "*cuius regio, eius religio*" was a stepping-stone in achieving the fuller sovereignty of territorial princes, with less and less direct intervention or majority rule in the HRE at large. Nexon (2009) is unconvinced. Departing from the consensus view that the Reformation birthed the modern nation-state system, he sees a much more complex and dynamic set of political forces emerging from the Reformation era. He contends that religious differences emerging from Europe's Reformations altered the exercise of power by introducing crosscutting religious motivations that competed with economic and political interests. Transnational religious movements, which involved a "cross-class network surrounding beliefs and identities", instigated a crisis in the state system by raising the costs of rule in heterogeneous, composite political communities. Employing network concepts and historical case studies, Nexon shows how religious networks overcame institutional barriers that had kept political resistance to empire local and complicated indirect-rule strategies.

Hence, beyond the confessional state, one of the most consequential political outcomes of the Reformation may lie in the creation of new kinds of religiously motivated social movements. If Nexon is right, then the shadows of these developments continue to affect the exercise of rule in composite states and the international response to political crises, as evidenced by contemporary political Islam and the wars in the Middle East and North Africa. We might take Syria as an especially grim example. Drawing on case studies, Stamatov (2010) argues that long-distance

political advocacy became an institution of the international system because of activist organizations created to advance the interests of religious groups. During wars of religion in the 16th and 17th centuries, activist networks first lent support to their co-religionists, as with the transnational Protestant support for the Dutch rebellion against the Habsburgs or the cause of the French Huguenots. Across confessional lines, this expanded both globally and sociologically as European empires reached overseas, with the targeted beneficiaries of advocacy now including "distant strangers" – morally sympathetic groups beyond religious group boundaries.

Berman (2003) argues that the Reformation affected Europe's political trajectory through its effect on law. In his magisterial study of the origins of legal institutions, Berman regards the Protestant Reformation as resulting in nothing less than a "revolution" in legal thinking and institutions. Luther and his followers rejected the medieval dualism of church and state, proposing instead the doctrine of the "two kingdoms" which limited the church to spiritual affairs and unified government under the power of the prince. When taken up by legal reformers, urban magistrates, and territorial rulers, they created the bases for integrated bureaucracies and legal formalism that provide the foundation of the "civil service state" characteristic of modern Northern and Central Europe. Contra Weber, Berman argues that it was not so much a Protestant ethic that spurred capitalist development, but rather the new "capitalist communitarianism" that flowed from the Protestant reorganization of the state and had, as it concrete manifestations, the legal institutions of the joint-stock company and the modern law of trusts.[12]

Gorski's (2000, 2003) work on the social and political implications of the Reformation favors a more radical interpretation of its effects on governance. Taking up the theme of "confessionalization" introduced by Schilling (1988), Gorski identifies the period between the middle of the 16th and the middle of the 17th centuries as an era in which rulers attempted to enhance state power through the newly established Protestant churches. According to Gorski, princes used the new churches to enforce social discipline in their territories in order to better regulate the population, enhance its productivity, and inculcate willing obedience. For their part, the

[12] Witte (2002) contends that, outside the economic sphere, Protestant legal innovations were less revolutionary. Whereas Lutherans were eager to abolish the canon law, there was no adequate substitute in existing civil law. Rather than develop radically new institutions, they cleverly synthesized existing canon law with the civil law of the cities and territorial states. Despite the confessional agenda of the reformers, the secular law of the princely states had strong continuities with ecclesiastical institutions, particularly as regards marriage and family law, education, and social welfare.

clergy's participation reflected its greater dependence on secular rulers following the Reformation, as well as competitive pressures that drove the new clergy to educate and socialize its flock into strong confessional loyalty. Gorski's case studies of the Netherlands and Brandenburg-Prussia demonstrate why Calvinist practices were more intensive and transformative in their potential than what was possible in Lutheran and Catholic polities. He presents sociological data from historical sources that show not only that the economic output of these lands improved, but also that the Calvinist confessional state markedly reduced violence, illegitimacy, and indigence. Turning to Europe more generally, Gorski finds evidence for different pathways for confessional state building, including in Catholic lands, via the institutions and organized efforts of the Counter-Reformation Church.

Poor relief in the aftermath of the Reformation is the focus of Pullan's (2005) work. He argues that Protestants initiated this kind of welfare reform. Poor laws originated in the Protestant parts of Germany during the early 1520s and spread northwards, with financing coming from the closure of monasteries. The Catholic princes of Southern Europe resisted these new practices of poverty relief, as the closure of monasteries was not an option in their lands.

Echoing Esping-Andersen's (1990) "three worlds" of contemporary welfare capitalism (Liberal; Corporatist-Statist; Social Democratic), Kahl (2005) traces specific confessional pathways to explain variation in contemporary European welfare-state institutions. In a comparative and historical examination of ideas about poverty and almsgiving across traditions, Kahl argues that modern attitudes toward poverty relief and the institutional response are inheritances of the confessional age. Whereas Catholics emphasized the nobility of the poor and the morality of private charity, Protestants stigmatized poverty and saw it as an individual failure. Nevertheless, Lutherans and Calvinists differed in their theological and institutional responses. Consistent with Luther's teaching that the state has both a spiritual and practical obligation to the common good, the predominantly Lutheran societies developed the generous, universal anti-poverty measures for which social-democratic welfare states are famous. Predominantly Calvinist societies favored industriousness and self-improvement, developing ungenerous, means-tested and market-oriented welfare institutions. Less likely to regard poverty as a social problem, Catholic societies favored decentralized, collectivist, overlapping and private responses to poverty, often organized and delivered by the clergy.

These studies suggest that the institutional consequences of the Reformation are not limited to the economic and political spheres: they transformed Catholics as much as Protestants. One of most innovative of recent studies of these transformations explains how the Church "rationalized" miracles in order to reinvigorate the cult of the saints. Protestant competition induced Catholic officials to develop new institutions to govern candidacy for sainthood. Employing social-network analysis of the canonization process, Parigi (2012) shows how the Church combined bureaucratic certification of the authenticity of miracles with advocacy by crosscutting social networks of laypeople lobbying in favor of their candidates. Over the long run, the resulting institutions both enhanced quality control and more tightly bound Catholics to the Counter-Reformation Church. As with the studies by Nexon and Stamatov, the non-economic consequences of the Reformation become evident in new forms of association and new forms of political mobilization through religious networks.

III.5. The Dark Shadow of the Reformation

While the effects of the Reformation on education, work ethic, and economic development seem to paint a largely positive picture, other research has highlighted the dark side of Protestantism. Leeson and Russ (2015) study European witch trials in the two centuries after the Reformation (c.1550-1700), which involved the prosecution of over 80,000 persons for witchcraft and claimed the lives of no less than half of them. They argue that witch trials reflect non-price competition between the Catholic and Protestant churches for religious market share in confessionally contested parts of early modern Christendom. They provide empirical evidence that witch trials were indeed more frequent in areas with more Protestant-Catholic conflict.

Spenkuch and Tillmann (2015) look at vote share of the Nazi party during the Weimar Republic. They use the same instrument employed by Spenkuch (2011), the district's religious orientation following the Peace of Augsburg of 1555, to establish a positive connection between Protestant population share and Nazi vote share. They give a political economy explanation of why Protestants were more likely to vote for Hitler than Catholics: while Catholics had their own party, the Zentrumspartei (Center Party) which was firmly rooted in the center of the political spectrum, Protestants ended up voting more for both the left and right ends of the political spectrum.

Becker and Pascali (2015) study the effect of Protestantism on anti-Semitism in a sample of more than 1,000 German cities. Using a difference-in-differences framework, they document that

anti-Semitism was higher in Protestant areas after the Reformation. They consider several channels for this differential pattern of anti-Semitism. One is that the Protestant reformers had different views on usury than the Church, allowing Protestants to enter the money-lending sector and compete with Jews. Second, the increased emphasis on education in Protestant areas might have been a pre-requisite allowing Protestants to enter the comparatively high-skilled banking sector. Finally, Luther spoke out very strongly against Jews in his final years and his idea to burn down synagogues expressed in his 1543 book "On the Jews and Their Lies" might have made anti-Semitic ideas more acceptable in Protestant areas.

Emile Durkheim highlighted another dark side of the Reformation in his 1905 book "Le Suicide", where he observed a higher suicide propensity of Protestants compared to Catholics across regions and countries. Becker and Woessmann (2015, first version 2011) empirically test the Durkheim thesis using Prussian county data. Using distance to Wittenberg as an instrument for the share of Protestants, they show that Protestantism is indeed associated with much higher suicide rates. Torgler and Schaltegger (2014) confirm this result at the subnational (cantonal) level in Switzerland, where they find higher suicide rates in cantons with higher shares of Protestants.

The five channels identified above – human capital, work ethic, economic development, governance, and the "dark" side – are the primary ones cited in the literature. Table 2 summarizes these various causes of the Reformation.

Table 2: Consequences of the Reformation

Variable	Study	Direction of Association	Unit of observation	N	Period of observation	Statistical Support	Attempt to Establish Causality
A. Human Capital							
Literacy rates	Becker and Woessmann 2009	+	Prussian counties	452	1871	Yes	IV
Gender gap in school enrollment and literacy rates	Becker and Woessmann 2008	+	Prussian counties	289 and 452	1816 and 1871	Yes	IV
Primary school supply and enrollment	Becker and Woessmann 2010	+	Prussian cities and counties	293 counties; 156 cities	1816	Yes	IV
Public spending on schooling; educational performance of military conscripts	Boppart, Falkinger, Grossmann, Woitek and Wüthrich 2013	+	Swiss districts	169	1875-1879, 1885-1889, 1899-1903	Yes, but only in conservative milieu	IV
Capability in reading, numeracy, essay writing, Swiss history	Boppart, Falkinger, Grossmann 2014	+	Swiss districts	169	1875-1879, 1885-1889, 1899-1903	Yes, and strongest for reading scores	IV
B. Protestant (Work) Ethic							
Hours worked	Spenkuch 2011	+	Individual-level data from German Socioeconomic Panel	13,411	2000-2008	Yes	IV
Work attitudes of Protestants and Catholics	Schaltegger and Torgler 2010	+	Individual-level data from European Values Survey (EVS)	17,221	1999/2000	More educated Protestants have better work ethic	No
Referenda on leisure, state intervention, and redistribution	Basten and Betz 2013	-	Municipalities along Prot-Cath border in West Switzerland	305	1980s-2000s	Yes	RDD
Life satisfaction when unemployed	van Hoorn and Maseland 2013	-	Individual-level data from EVS and World Values Survey (WVS)	ca. 150,000	1981-2009 (5 waves)	Yes	No
Pro-market attitudes	Hayward and Kemmelmeier 2011	+	Individual-level data from WVS	ca. 178,000	1989-2009 (4 waves)	Yes	No
Protestant ethic as	Becker and	+	Prussian counties	452	1871	No	IV

part "residual difference" in income between Protestants and Catholics	Woessmann 2009						
C. Economic Development							
Income tax revenue per capita, % of labor force in manufacturing and services, income of male elem. school	Becker and Woessmann 2009	+	Prussian counties	452	1877, 1882, 1886	Yes	IV
City size/growth	Cantoni 2015	+	Cities in HRE	272	1300-1900	No	Diff-in-diff
Entrepreneurship among religious minorities	Nunziata and Rocco 2014	+	Individual-level data from the European Social Survey (ESS)	ca. 9,000	2000s	Yes	Diff-in-diff
	Nunziata and Rocco 2015	+	Individual-level and district-level data from Switzerland	ca. 2 mio. individuals and 181 districts	2000s	Yes	Diff-in-diff
Social ethic	Arruñada 2010	+	Individual-level data from International Social Survey Programme (ISSP)	19,246	1998/99	Yes	No
Choice of university major, occupational choice in "modern" degrees	Cantoni, Dittmar, and Yuchtman 2015	+	Individual-level data from university matriculation records and biograophies	???	Reformation period	Yes	Yes
D. Governance							
Rise of Parliament as legitimizing agent	Rubin 2016	+	England and the Dutch Republic	N/A	16^{th} and 17^{th} centuries	N/A	N/A
	Greif and Rubin 2015	+	England	N/A	16^{th} and 17^{th} centuries	N/A	N/A
Rise of state system	Philpott 2000	+	European principalities	N/A	1517-1648	N/A	N/A
Rise of state system	Nexon 2009	+	European polities at regional and super-	N/A	1517-1648	N/A	N/A

			regional levels				
Transnational advocacy	Stamatov 2010	+	Europeans religious organizations	N/A	Ca. 1550-1850	N/A	N/A
Legal rationalization	Berman 2003	+	German principalities and England	N/A	1517-1689	N/A	N/A
Establishment of State churches	Gorski 2000	+	European states	N/A	Ca. 1520-1700	N/A	N/A
Social discipline	Gorski 2003	+	Brandenburg Prussia and the Netherlands	N/A	Ca. 1550-1700	N/A	N/A
Poor relief	Pullan 2005	+	European states	N/A	Ca. 1520-1650	N/A	N/A
Social welfare regimes	Kahl 2005	+	Lutheran, Calvinist and Catholic confessional organizations	N/A	ca. 1500-1800	N/A	N/A
New Institutions for Canonizing Saints	Parigi 2012	+	Canonization process of candidate saints	N/A	1588-1642	N/A	N/A
E. "Dark" outcomes							
Witch trials	Leeson and Russ 2015	+	Witches in 11,000 trials across 323 European counties	43,000	ca. 1550-1700	Yes in areas with more Cath-Prot conflict	No
Votes for Nazis	Spenkuch and Tillmann 2015	+	Counties in German Empire	982	1920s/1930s	Yes	IV
Anti-Semitism	Becker and Pascali 2015	+	Cities in German Empire	>2,000	1300-1900	Yes	Diff-in-diff
Suicide	Becker and Woessmann 2015	+	Prussian counties	452	1871 and 1816/21	Yes	IV
	Torgler and Schaltegger 2014	+	Swiss cantons	26	1981-2001	Yes	No
Suicide acceptability	Torgler and Schaltegger 2014	+	Individual-level data from EVS	ca. 19,000	1999/2001 (one wave)	Yes	No

III.6. An Addendum on Missionaries: Taking Christianity and the Reformation outside Europe

An interesting strand of the literature looks at the effect of Christian missionaries on education and economic outcomes outside Europe. Pioneered by Woodberry (2004), researchers have looked at whether the presence of missionaries (Protestant or Catholic) had long-term effects on modern-day outcomes.[13] Nunn (2010) finds that missionaries did indeed change religious beliefs by converting large parts of Africa to Christianity. Gallego and Woodberry (2010) provide evidence that regions in former Colonial Africa in which Protestant missionaries dominated have higher literacy rates than those where Catholic missionaries dominated. They attribute this to greater competition between different missionary groups in Protestant areas. Looking at China, Bai and Kung (2015) find that areas that had a higher rate of penetration of Protestant missionaries during the 19th century have higher rates of urbanization at the beginning of the 20th century and that the vast majority of this urbanization effect is explained by knowledge diffusion activities associated with schools and hospitals erected by the missionaries. Chen, Wang, and Yan (2014) confirm these findings and extend them further in time, showing that the Protestant legacy matters for economic development. Protestant missionaries are also associated with higher literacy in India, as shown by Mantovanelli (2015). Similarly, current health outcomes are better closer to historical Protestant medical missions (Calvi and Mantovanelli, 2014). Nunn (2014) looks at Protestant and Catholic missionary activity in Africa and finds that both had a long-term positive impact on education, although women profited more in Protestant areas. McCleary (2013) has cautioned against equating all forms of Protestantism as equally beneficial for human capital acquisition. In fact, in Guatemala, Evangelical, Pentecostal, and neo-Pentecostal denominations and churches focused their efforts on evangelizing, emphasizing eschatological urgency of conversion with little investment in human capital.

Woodberry (2012) highlights the role Protestant missionaries played in influencing the rise and spread of stable democracy around the world. Statistically, the historic prevalence of Protestant missionaries explains about half the variation in democracy in Africa, Asia, Latin America, and Oceania. The key mechanism behind this finding is that Protestants supported religious liberty, mass education, mass printing, newspapers, voluntary organizations, and colonial reforms, thereby creating the conditions that made stable democracy more likely.

[13] See Woodberry (2011) for an early survey on the literature on missionaries.

IV. Concluding Thoughts

IV.1. What Have we Learned?

The growing social science literature on the Reformation leaves us with three general lessons. The first is that long-lasting social and cultural upheavals are possible when a confluence of supply-side features coincide to permit challengers to the old regime to become sufficiently entrenched. Demand for the Reformation existed for centuries prior to Luther. However, the Reformers of the early 16th century were successful for several reasons having to do with timing and setting. These reasons include recent advances in information technology (the printing press); outside threats (the Ottomans) which sidetracked the attention and resources of the papacy and Habsburgs; the heterogeneous and decentralized nature of the HRE; and networks of sympathetic university students and intellectuals placed in strategic locations throughout the HRE. These features point to an interaction between luck, timing, and geography that are typical of massive social movements – and make them hard to predict. Yet they also point to general features that are common to such movements: technologies that permit coordination, widespread networks of potential sympathizers, and favorable political conditions.

This literature's second general lesson is that religion can influence long-run economic outcomes. We do not mean this in a Weberian sense – our review of the literature confirms previous criticisms of Weber's thesis – but that religious institutions and religious doctrine affect a host of variables that are important for economic growth. These include human capital, governance, entrepreneurship, social ethic, social networks, and missionary work. The literature suggests that each of these variables were encouraged by Protestantism ideology. However, there was also a dark side to Protestant ideology – Protestant share of the population correlates with a host of evils, including Nazi vote share, suicide, anti-Semitism, and witch persecutions.

The final general lesson is that institutions matter. Indeed, one of the primary reasons that religion matters is through its effect on institutions. Weber was not wrong to note the correlation between the Reformation and positive economic outcomes; where he was wrong was that he ignored the institutional channel connecting the two. Where the Reformation took hold, it fundamentally altered political, legal, and social institutions. This ultimately resulted in the ascendancy of parliaments, the secularization of law, increased emphasis on education, and the precursors of the welfare state. The long-run economic effects of the Reformation are therefore only understandable when considered in conjunction with their associated institutional changes. These

outcomes are at the root of the modern economy, and it is therefore fair to say that this literature very clearly supports the notion that institutions matter for economic development and democracy.

IV.2. What are the Open Questions?

The literature on the long-run effects of the Reformation, measured in the 19th, 20th and 21st centuries, is quite large. However, there is considerably less work on the short-run effects (during the first decades after 1517) and medium-run effects (before the onset of the Industrial Revolution). For these periods, further digitization of individual-, city- and county-level historical sources could yield insights on various important issues: how did networks between supporters (and enemies) of the Reformation form? How did they operate? Have they left a legacy? Indeed, many of the long-run effects found in the literature must have worked via short-run channels. Digging deeper into the shorter- and medium-run effects of the Reformation could provide important falsification tests for those works claiming the Reformation entailed long-run socioeconomic effects.

Some Protestant countries had famous Reformers (Calvin and Zwingli in Switzerland, John Knox in Scotland), but in other countries the Reformation either never gained substantial popular traction or was imposed from above. What determines the differential pattern of "bottom-up" versus "top-down" Reformation? Why did Protestant movements gain widespread support in some areas and not in others? As for the long-run consequences of the Reformation in Europe, the vast majority of studies concentrate on Germany and Switzerland. We suspect that more research is feasible using micro-regional data from England and Scotland, the Netherlands, Poland, and the Austro-Hungarian Empire, all of which ended up, during or after the Reformation period, with sizeable populations of different confessional groups. Some of these regions had natural experiments imposed upon them by border changes, forced population movements, or Communist governments, any of which might be useful for identification. For example, the boundaries of western Poland changed numerous times throughout its history. Many of these cities, such as Wroclaw and Szczecin, were part of the HRE in the 16th century and became Protestant, while nearby neighboring cities remained Catholic. Parsing out the effects of the Reformation from the many other historical influences that affected socioeconomic outcomes in this region is not simple, but previous work on Germany and Switzerland suggests that it is possible.

Network analysis could help to shed light on the causes and workings of the Reformation and help us to understand how it spread beyond Germany. Many of the studies we discussed refer to

diffusion processes – diffusion is usually the latent concept underlying the case for instrumental analysis using proximity measures. Social networks should influence the diffusion of ideas and institutions through mechanisms such as information flows, the exercise of influence, and the capacity of groups to coordinate. Recent studies on the Reformation and its consequences are beginning to make explicit use of network concepts and methods (Kim and Pfaff 2012; Parigi 2012, Nexon 2009). Future works should do more to specify institutional factors, agents of diffusion, and the relational structures underlying the rise, spread, and adoption of the Reformation. The use of network methods is expanding across the social sciences (Carrington, Scott and Wasserman 2005; Granovetter 2005; Ward, Stovel, and Sacks 2011) and these can be adapted to historical and comparative research in spite of the obstacles sometimes presented by historical data (Erikson and Bearman 2006; Hillmann 2008; Weatherell 1998). The concurrence of more historical social scientists gaining familiarity with network concepts and methods alongside the digitization of historical materials will increasingly facilitate the collection of network data, opening up new and promising areas of research.

Social scientists need to test more thoroughly the claims of studies that argue for the importance of the Reformers' struggles for state-formation and economic development before generalizing such claims. Did Protestant states really have the transformative effects that case studies of particular countries suggest? Historical studies suggest that there is good reason to be skeptical that the theologians and rulers who sought to remake societies realized their ambitions at the local level (Karant-Nunn 1979, 1987; Strauss 1978; Witte 2002). Social scientists are only beginning to explore the regional and subnational variation in institutional development and its effect on economic development. This is a promising avenue for research with broader implications for the comparative study of development.

Compared with the Protestant story, social scientists have so far relatively neglected the institutions and long-run consequences of the Catholic Counter-Reformation. Important historical work suggests that Counter-Reformation activities in fields such as education, the arts, and administration were critical features of state formation in polities such as the Habsburg monarchy (Evans 1979; Kann 1974). As the eminent Central European historian R.J.W. Evans (1979) declared, "Austria is depicted as the guardian of Catholic orthodoxy, whereas in fact it was Catholic orthodoxy which created Austria." How did the Counter-Reformation operate? What was its balance between "hard" (e.g., the Inquisition) and "soft" power (e.g., schooling and Baroque

culture)? How effective was the Counter-Reformation Church, particularly in terms of state capacity and economic performance? The role of Ignatius Loyola and the Jesuit Order in the reorganization of education and the establishment of new higher schools and universities is an especially important area that deserves greater scrutiny. Were the economic consequences of Jesuit institutions comparable to – and as long lasting as – Protestant educational reforms (as argued by economic historians)? If the ideological content of religious ethics is less important than their consequences for human capital formation, then the practices and consequences of the Counter-Reformation Church demand greater scrutiny. Perhaps further research will reveal that Protestant and Catholic confessional differences in areas such as human capital formation and state capacity have been overstated. Future work might continue to explore if Protestantism influences economic development through attitudinal, institutional, or human-capital mechanisms in countries where it has been widely adopted in Africa, Latin America, and Asia.

In summary, we expect the literature on the causes and consequences of the Protestant Reformation to continue to thrive for years to come. The digitization revolution affecting economic and social history (Abramitzky 2015; Mitchener 2015) is likely to lead to exciting research, using "big data" and previously unmined source material to answer many of the open questions in the Reformation literature.

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