

# *The Beginnings of Industrialization*

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## **Germany and industrialization**

It may seem curious to speak of industrialization as beginning around 1600. Industrialization is often regarded as synonymous with the rise of mechanized manufacturing in centralized factories, and this did not occur even in England until 1760–80, and in Germany not until 1830–50. But machines and factories were only late landmarks – albeit important ones – in a much longer process of industrial growth in Europe, dating back to at least 1500. This long-term industrialization was based almost wholly on decentralized work in producers' own houses, using domestic labour and a simple, slowly changing technology. Yet it was responsible for a gradual expansion in the proportion of the labour-force working in industry and the share of the total output of the economy represented by manufactures. It was also responsible for the emergence, between about 1500 and about 1800, of what German historians have called *Gewerblandschaften*, 'industrial regions', in which an above-average proportion of people worked in industry and a substantial share of what they produced was exported beyond the region.<sup>1</sup> Important as factory industrialization was, many of its seeds were sown long before, during the slow and dispersed industrialization of many regions of early modern Europe.

This early modern industrial growth was part of a wider process of *regional specialization*, which began slowly in the late medieval period, but accelerated decisively during the sixteenth century. During this process many more European regions than ever before began to specialize in particular forms of agriculture, as well as particular branches of industry, producing surpluses for export and importing what they did not produce for themselves. Thus regional self-sufficiency declined, and inter-regional trade grew. For the first time, large volumes of non-luxury goods began to be traded not only among households and communities, but also among

regions. By the end of the sixteenth century specialized regions had arisen all over Europe, producing surpluses of grain, livestock, industrial raw materials, and manufactured products, and exporting them. Without increases in agricultural production and improvements in trade, those specializing in industry would have lacked food, and those specializing in the production of food would not have provided markets for industry – and hence the specialization and growth of industry could not have occurred. The early beginnings of industrialization were thus part of a wider process of regional specialization, in which the growth of agriculture and trade played essential roles.<sup>2</sup>

Germany took part fully in the regional specialization and economic growth of the sixteenth century. As early as 1500, the Upper German region around Nuremberg and Ulm was one of the three most important manufacturing regions of Europe, alongside Upper and Central Italy and The Netherlands. By 1600, building on this base, some of the most vigorous industrial and trading areas in Europe were located in German-speaking Central Europe. Mining and metal production, in particular, had seen important technological innovations and enormous growth. In 1500, the Holy Roman Empire was already producing half the iron in Europe; the sixteenth century saw an estimated doubling of output, and the rise and growth of metal-producing regions in the Rhineland, Hesse, the Harz, Upper Saxony, and the Thuringian Forest. In textile production, the ‘leading sector’ of early modern industry, Germany was less advanced. In the woollen branch, English and Dutch imports were generally cheaper and better than German products, but the sixteenth century saw the expansion of German sheep herds, the introduction by Dutch religious refugees of the more saleable ‘new draperies’ or worsteds, and the rise of German fine woollen industries. Wide expanses of Germany were well suited to flax cultivation, and during the sixteenth century flourishing linen regions developed beyond the traditional German linen area in Upper Germany, to the Rhineland, Westphalia, Saxony, and Silesia. Cotton had begun to be imported in large quantities as early as the fifteenth century by the great south German Imperial Cities, where it was turned into fustian (a linen-cotton mix). Turnover of dyed fustian in Augsburg increased by a factor of twenty in the course of the sixteenth century, peaking at 410,000 pieces annually in the decade after 1600.<sup>3</sup>

Commercially, too, Germany occupied an advantageous position in 1600. During most of the sixteenth century, the economic centre of gravity of Europe still clearly lay in the Mediterranean world, and the flourishing south German Imperial Cities functioned as important links between the Mediterranean and northern Europe. Yet the centre of gravity of the European economy was gradually shifting to the north Atlantic, with which Germany also had numerous important ties.<sup>4</sup> The Rhineland and Westphalia were already supplying textiles to Dutch markets and competing with The Netherlands and England through lower labour costs. Saxony

and Silesia were supplying linens and metals to the Atlantic trade. North-eastern Germany was supplying grain to the growing consumer markets of The Netherlands and England. The Hanseatic cities (particularly Hamburg) and the great fair centres of Leipzig and Frankfurt an der Oder functioned as important commercial channels for raw materials from eastern Europe to feed the growing demand of the Atlantic economies. Through its multiple connections with the Mediterranean and Atlantic worlds, Germany occupied a central position in the growing European economy of the sixteenth century.

It is therefore all the more striking that by 1800 Germany as a whole had become relatively backward compared to much of western Europe – especially England and Flanders, but also Switzerland and France. The relative retardation of German agriculture and trade, discussed in Chapters 3 and 4 of this volume, were paralleled in German industry by the late eighteenth century. While England had begun to industrialize in the 1760s, and Belgium, Switzerland, and France followed over the next few decades, Germany would not see industrial take-off until the 1840s. One or two very advanced German regions, in the Rhineland and Saxony, experienced what has been called ‘pre-industrialization’ from the late 1780s onward, with the scattered introduction of factories and machines, but even they did not see true factory industrialization until after about 1810. Westphalia did not industrialize until the 1850s, Württemberg and Baden not until the 1870s, Bavaria and much of the Prussian East not until the very end of the nineteenth century. By 1800, therefore, German industrial development was characterized by two striking features: overall relative backwardness (even in the most advanced regions), and enormous regional variation.<sup>5</sup>

How was Germany transformed from the dynamic and advanced economy of the sixteenth century into the relatively stagnant and conservative backwater of 1800? This question underlies any account of the growth which did take place in German industry between 1600 and 1800. The two answers most often proposed emphasize external shocks, one at the beginning of Germany’s long relative decline – the Thirty Years War – and one at the end, in the competition from foreign (especially British) cotton, factories, and machines. However, there are some problems with such exogenous explanations of German industrial development.

It is certainly true that the ‘great war’ devastated many areas of Germany between 1620 and 1650. But, as discussed in Chapter 8 of this volume, most of the direct demographic and economic depredations of this war were made good quite rapidly. According to the thorough survey by Karl-Heinrich Kaufhold, most German industrial regions which were hit hard by the Thirty Years War recovered astonishingly quickly.<sup>6</sup> In a number of German regions there had already been signs of downturn by the end of the sixteenth century, a generation before the war began, at the beginning of the ‘crisis of the seventeenth century’ which afflicted many parts of Europe.<sup>7</sup> The severity of the Thirty Years War was not geographically

correlated with subsequent industrial backwardness. Rather, a number of regions hard hit by the war were subsequently among the most industrialized in Germany: the linen and worsted regions of depopulated and devastated Württemberg; much of the Rhineland, which had been a corridor for troop movements; and the linen regions of Saxony and Silesia.<sup>8</sup> Historians generally agree that the most profound and enduring effects of the war were indirect: not the immediate loss of labour or capital, nor even the disruption of trade routes, but rather the ratchet-like growth in the powers of the state, and the proliferation of privileges granted to favoured social groups by princes concerned to ensure fiscal and political support during military crises.<sup>9</sup> These indirect effects were influenced by social and political institutions, which varied widely from one German territory to the next. What mattered for industry was not the war itself, but how each German society responded to it; and that depended on its internal characteristics.

The relative backwardness of German industries is also sometimes explained in terms of competition from English factories after 1760. But this explanation encounters similar problems. Many German industries were already falling behind non-factory industries in England, Flanders, and Switzerland as early as the seventeenth century, long before the first factories. Moreover, the proliferation of factories in England itself was quite slow: only a very small percentage of English industry mechanized until around 1820, and the replacement of linen by cotton in the European textile sector took at least 50 years (from 1780 to 1830). The continental European economies had a long time to adjust; and different economies did so in different ways. Belgium and Switzerland responded by shifting from linen to cotton and introducing mechanized production; so, more hesitantly, did Saxony and the Rhineland. But other German linen regions (in Silesia, Württemberg, and Westphalia) obstinately resisted cotton and machines for many generations. The effect of factory competition thus varied widely according to the ability and willingness of different German societies to adapt to the challenge.<sup>10</sup>

## The theory of proto-industrialization

If German industrial development in the seventeenth and eighteenth centuries cannot be explained in terms of exogenous factors, such as war or foreign competition, how can it be explained? A major contender for the role of explaining industrial development, not just in Germany but throughout Europe in the early modern period, is the 'theory of proto-industrialization'. 'Proto-industrialization' is a term invented in 1972 by a

historian of Flanders, Franklin Mendels, to describe the growth of export-orientated rural industries which took place in many parts of Europe between about 1600 and about 1800. According to Mendels, these 'proto-industries' were responsible for generating the population growth, labour, capital, entrepreneurship, commercial agriculture, and consumer markets ultimately required for factory industrialization.<sup>11</sup> Mendels' hypotheses were extended in 1977 when three German historians, Peter Kriedte, Hans Medick and Jürgen Schlumbohm, argued that proto-industrialization played a major role in the European transition from 'feudalism' to 'capitalism'.<sup>12</sup>

How are 'proto-industries' supposed to have transformed European societies so fundamentally?<sup>13</sup> For one thing, they are supposed to have changed people's demographic behaviour. Before proto-industries, it is argued, population growth was slow, because it was carefully adjusted to slow economic growth, through late marriage (in the mid- to late twenties) and high celibacy (10–15 per cent of people never marrying). Proto-industries are supposed to have freed marriage from waiting on inheritance, enabling universal marriage at an early age. Early and universal marriage, combined with the increased value of child labour in proto-industrial work, increased fertility, leading to a 'population explosion'. This population growth created an unlimited supply of cheap industrial labour for the first factories and also, according to Kriedte, Medick, and Schlumbohm, helped to break down the structures of traditional 'feudal' society.<sup>14</sup>

Proto-industries are also supposed to have changed society and the economy directly, through transforming social institutions. Because proto-industries arose in the countryside, it is argued, they circumvented town privileges, craft guilds, and merchant companies, causing these traditional urban institutions to break down. Because they brought in their train population growth, non-agricultural livelihoods, continual expansion in production, and new economic and social practices, they also helped break down traditional rural institutions such as village communities and manorial systems. In place of 'feudal' institutions – privileged towns, guilds, merchant associations, peasant communities, and manorial systems – proto-industries introduced what was to become the central institution of 'capitalist' society: the market.<sup>15</sup>

Finally, proto-industries are supposed to have generated the inputs necessary for factory industrialization. According to the theorists, they stimulated production of the food surpluses and industrial raw materials needed for factories by encouraging the rise of regions specializing in commercial agriculture. They created the cheap industrial labour which would ultimately be recruited into the factories; they accumulated the capital necessary for investing in the first factories through the profits they made for merchants and putters-out; finally, they created the consumer markets, both at home and abroad, which would subsequently buy the output of the first factories.<sup>16</sup>

The terms 'proto-industry' and 'proto-industrialization' have been widely adopted by historians of Germany seeking a concise way of referring to the industrial component of the regional specialization which took place here, as elsewhere in Europe, during the early modern period.<sup>17</sup> But how useful is the *theory* of proto-industrialization in explaining the development of industry in Germany between 1600 and 1800? Since the original hypotheses about proto-industrialization were put forward in the 1970s, there has been an outpouring of research on early modern export industries all over Europe, including Germany. This rich new body of empirical work, much of it directly stimulated by the theory of proto-industrialization, has revealed a number of fundamental drawbacks to the original hypotheses.

The systematic changes which the growth of rural export industries are supposed to have wrought in demographic behaviour have failed to materialize. Instead, a very wide variety of demographic patterns can be observed in different proto-industrial regions; this is reflected by considerable demographic variation among different German industrial regions before 1800.<sup>18</sup> The replacement of traditional social institutions by markets shows little geographical or chronological association with the rise of rural export industries; in Germany, as we will see below, traditional institutions survived in many industrial regions. The commercialization of agriculture appears to have begun in many places before, and independently of, the rise of proto-industries; urban centres already provided a substantial pool of demand for agricultural surpluses, even without rural industrial regions. Indeed, the neglect of the role of towns and cities in early modern industrialization is widely recognized as a major gap in the theory. Finally, it has proved difficult to establish clear links between proto-industrialization and factory industrialization: the labour, capital, skills, food supplies, raw materials, and consumer markets for the early factories did not necessarily derive from proto-industries; and although some proto-industrial regions successfully made the transition to machines and factories, others remained proto-industrial, and still others shifted back to agriculture.<sup>19</sup>

To sum up: the growth of rural export industries, although indeed widespread in early modern Europe, had widely varying demographic, social, and economic effects. Indeed, this regional variation is itself one of the most striking findings to emerge from the last 20 years of empirical research on proto-industrialization. Rather than attempting to force all early modern European industries into the straitjacket of a single pattern of development, the 'second generation' of proto-industrialization studies is now focusing on explaining the *variation* among industries and regions, as a more promising approach to explaining the sources of economic change and development.<sup>20</sup>

This is particularly relevant in the German context, since the theories of proto-industrialization assume that all of Europe responded in much the same way to the economic changes of the early modern period. They do not even address – let alone answer – the question of why some European

economies with numerous 'proto-industries' (such as Germany) grew and industrialized more slowly than others (such as England, Flanders, Switzerland, or France). Nor do the theories of proto-industrialization concern themselves with why certain early modern industrial regions (such as those in Saxony or the Rhineland) experienced rapid economic, social, and demographic development between 1600 and 1800, while others (such as those in Westphalia, Württemberg, or Silesia) remained extraordinarily resistant to change for centuries.<sup>21</sup> How, then, might historians provide a satisfactory account of the industrial development of different parts of early modern Germany?

## Early modern German industrial regions

One approach has been to try to put together a complete empirical picture of German industries before 1800. Although there is a rich older literature, most of it is oriented toward specific industries, *Landesgeschichte* (the history of particular German territories), or the teleological perspectives of German factory industrialization in the nineteenth century.<sup>22</sup> As a consequence the state of research on early modern Germany industry is fragmentary, with plenty of case studies but few general perspectives, and no complete account of what happened to industry in Germany as a whole in the course of the early modern period. In an attempt to remedy this unsatisfactory state of affairs, in 1986 Karl-Heinrich Kaufhold undertook the heroic task of providing a thorough survey of German industries between 1650 and 1800. Eschewing the term 'proto-industry' as too restrictive, he focused on *Gewerblandschaften* (industrial regions), which he defined as regions with an above-average density of industrial employment and a large proportion of output sold beyond the region.<sup>23</sup> On the basis of the scattered and uneven existing literature, he identified no fewer than thirty-nine industrial regions in Germany before 1800. These are listed in Table 9.1, and their general locations are shown in Fig. 9.1. Kaufhold's survey provides historians with a much better picture than before of the characteristics of early industrialization in Germany which any satisfactory theory about it must explain.

As can be seen from Table 9.1, there were wide expanses of Germany with no industrial regions. In the far North and East – Schleswig-Holstein, Mecklenburg, and the eastern and central provinces of Prussia (Pomerania, East and West Prussia, Lithuania, the Netze District (Noteć), Neumark, Kurmark, Magdeburg, and Halberstadt) – there was little rural industry, and even the densest urban industries (as in Berlin) were oriented primarily to the local market.<sup>24</sup> Industrial regions were also absent from parts of

Table 9.1 German industrial regions c. 1800: a provisional survey<sup>a</sup>

Industrial region	Most important products and branches of industry <sup>b</sup>
Upper Lusatia (Saxony)	Linen yarn and linen cloth
Chemnitz and area (Saxony)	Cotton yarn and cloths, stockings, gloves, caps, etc., calico-printing
Erzgebirge (Ore Mountains) (Saxony)	Silver, cobalt, tin, dyes; iron and iron wares; lace-making, trimmings-making, embroidery; straw-plaiting, toys
Vogtland (Saxony)	Cotton yarn and cotton cloth; embroidery; lace-making; stockings, caps; musical instruments
Region of Schmalkalden, Zella, Mehlis, and Suhl (Thuringia)	Iron, steel; iron and steel wares, especially weapons
Meininger Oberland (esp. Kreis Sonneberg) (Thuringia)	Toys; wooden wares; slates and slate-pencils
Schwarzburgische Oberherrschaften (Thuringia)	Wooden and iron wares; medicaments
Reuß principalities (Thuringia)	Woollens and worsteds; cotton cloths, stockings
Duchy of Weimar (Thuringia)	Stockings
Obereichsfeld (Thuringia)	Worsteds; linen cloth
Lower Silesian mountains (Silesia)	Linen yarn and linen cloth
Upper Silesian mining area (Silesia)	Iron, lead, silver, tin, mineral coal
Area around Nuremberg (Principality of Ansbach) (Franconia)	Cotton cloths and cotton wares; stockings; needles; mirrors; Lyon wire
Area around Bayreuth (Franconia)	Cotton yarn and cotton cloth
Area around Hof (Franconia)	Cotton yarn and cotton cloth
Upper Palatinate	Iron; glass; linen cloth
Allgäu (Swabia)	Linen yarn and linen cloth; embroidery; cotton cloth
Ulm and area (Swabia)	Linen yarn and linen cloth
Swabian Jura (Heidenheim-Urach-Münsingen-Blaubeuren) (Württemberg)	Linen yarn and linen cloth
Eastern Black Forest and its eastern foothills (Württemberg)	Worsteds
Southern Black Forest (Baden, Anterior Austria, etc.)	Embroidery; cotton yarn and cotton cloth
High Black Forest (Todtnau, Triberg, Furtwangen, Neustadt) (Baden, Anterior Austria, etc.)	Clocks; music-boxes; straw-plaiting, brushes, spoons
Saar area (Middle Rhineland)	Mineral coal, iron; glass

Table 9.1 cont.

Neuwieder Becken with Westerwald (Middle Rhineland)	Iron; furniture; pottery
Nordeifel (North Rhineland)	Iron, lead; fine woollens; sole-leather
Aachen-Stolberg-Düren (North Rhineland)	Mineral coal, brass; woollens; iron and iron wares; paper; needles
Krefeld-Gladbach-Rheidt and area (North Rhineland)	Silk wares; linen yarn and linen cloth; cotton cloth
Siegerland and Principality of Nassau-Dillenburg (North Rhineland)	Iron, steel, lead, silver, copper; linen cloth; cotton cloth; sole-leather
County of Mark (North Rhineland)	Iron, steel; iron and steel wares; wire; needles; brass wares; woollens; cotton cloth
Duchy of Berg, 'upper' half (North Rhineland)	Steel; iron and steel wares, esp. cutlery and small iron wares; cotton yarn and cotton cloth; woollens
Duchy of Berg, 'lower' half (North Rhineland)	Yarn-bleaching; ribbons, cords, braid; linen cloth; cotton yarn and cotton cloth; dyeing; silk wares
Tecklenburg (Westphalia)	Linen yarn and linen cloth
Minden-Ravensburg (Westphalia)	Linen yarn and linen cloth
Western Münsterland (Westphalia)	Linen cloth
Lippe-Detmold (Westphalia)	Linen yarn and linen cloth
Prince-Bishopric of Osnabrück (Westphalia)	Linen yarn and linen cloth
Harz (Lower Saxony)	Silver, lead, copper, iron
Central and southern Lower Saxony	Linen yarn and linen cloth
North Hesse	Linen yarn and linen cloth

<sup>a</sup> 'Industrial regions' are defined as being areas in which there was an above-average density of industry (measured according to number employed in industry per 1,000 inhabitants) and where the industries involved sold a considerable proportion of their output beyond the local area.

<sup>b</sup> The order of appearance is not identical to the order of importance (which cannot be estimated because of lack of adequate empirical information).

Source: K.-H. Kaufhold, 'Gewerbelandschaften in der frühen Neuzeit', in H. Pohl, ed., *Gewerbe- und Industrielandschaften vom Spätmittelalter bis ins 20. Jahrhundert* (Stuttgart, 1986), pp. 112–202, this table on pp. 171–3; definition of industrial region on pp. 114–15.

the German South: Bavaria and most of present-day Baden except for the Black Forest had a high general density of locally oriented rural crafts, but no concentrated and export-oriented industrial regions.<sup>25</sup> At the other end of the spectrum, there were four large geographical agglomerations within Germany which together accounted for more than three-quarters of the industrial regions identified by Kaufhold: Saxony-Thuringia (containing more than one-quarter of all German industrial regions), the Rhineland (with more than one-fifth), south-west Germany, and Westphalia-Lower Saxony.<sup>26</sup> Industry was distributed across Germany very unevenly.

Early modern German industrial production was also concentrated into

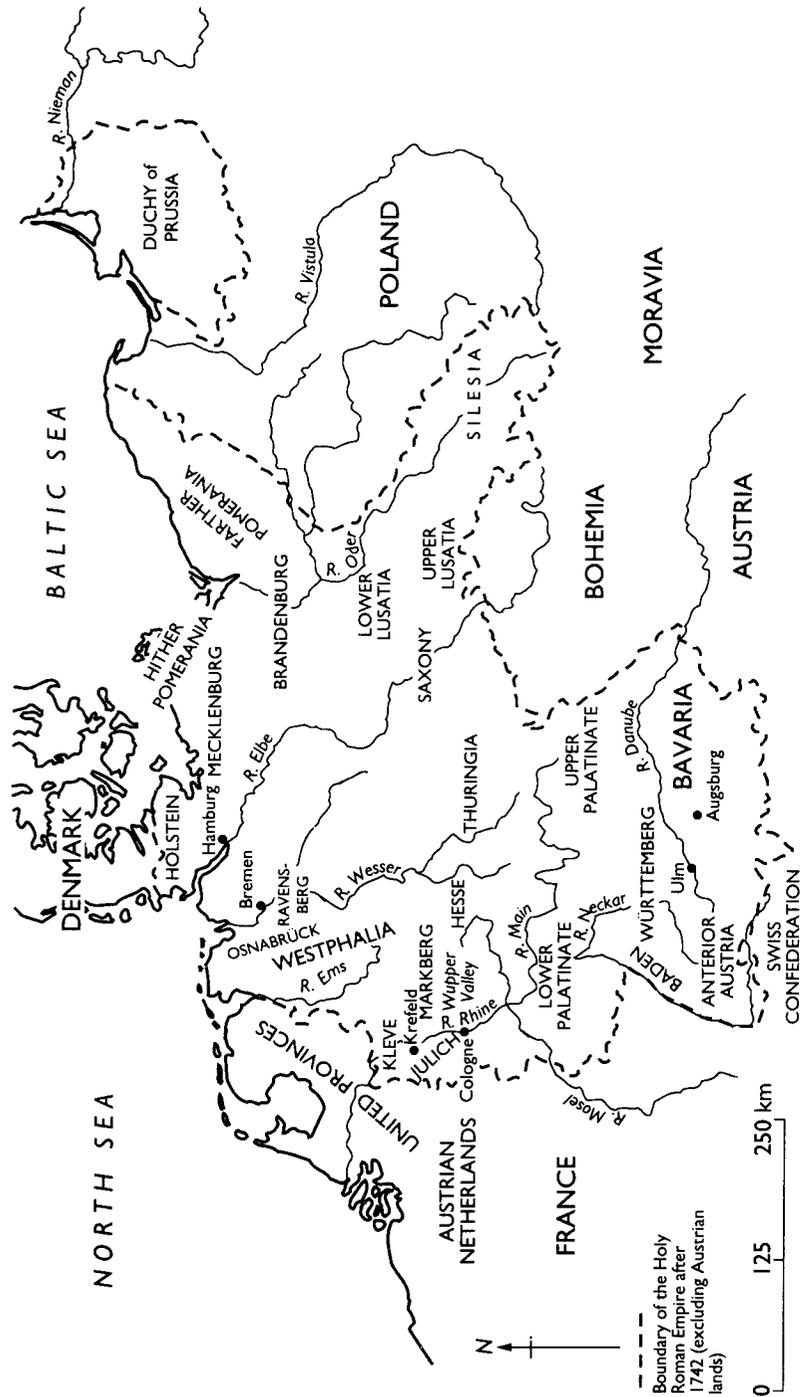


Fig. 9.1 Map of the Holy Roman Empire of the German Nation after 1742 (excluding Austrian Lands)

certain sectors. Two-thirds of the industrial regions identified by Kaufhold were 'monostructured' (dominated by a single industry). The vast majority concentrated on textiles: in nine out of ten monostructured regions the single industry was a textile one, and in two-thirds of 'polystructured' regions textiles played an important role. All metal industries taken together came a long way behind. Linen was by far the most important single industry: half of the monostructured textile regions, and between a quarter and a third of all German industrial regions, produced linen only.<sup>27</sup>

Within German industrial regions, rural production played an important role, but by no means an exclusive one. In most cases, industry formed a rural-urban conglomeration, with some production stages located in the countryside, others in the towns, and others split between the two types of location. Some of the most vigorous and successful industrial regions, those in Saxony and the Rhineland, largely lacked the strong town-country dichotomy found elsewhere in Germany.<sup>28</sup>

Industry was organized into a wide variety of forms of enterprise. The original theories of proto-industrialization emphasized a universal and unilineal transition towards domestic industry in production and the putting-out system in finance and marketing. Kaufhold found that these two organizational forms did make an appearance in most German industrial regions between 1650 and 1800. However, his analysis revealed a more complicated picture than can be accounted for by a stage-like progression to domestic industry and putting-out: more often than not, different forms of enterprise existed side by side in the same industry. Thus it was not uncommon to find an industry in which some production occurred as craft work (with a workforce of masters, journeymen, and apprentices, producing in a craft workshop), others in domestic industry (with a family workforce, producing in the dwelling), and still others in a centralized manufactory (with a hired workforce, producing in a central 'proto-factory'). Similarly, a single industry might see all three systems of early modern industrial finance and marketing: a *Kaufsystem* (artisanal system), where independent producers procured their own raw materials, owned their own tools, and sold their output to merchants; a *Verlagssystem* (putting-out system), where merchants advanced raw materials and sometimes tools to producers, who turned them into finished products in exchange for a small fee per item; and a manufactory system, in which capital and marketing were supplied to some or all stages of production in a central plant. Which organizational form was dominant, in either production or finance and marketing, varied within the same industry, across different stages of production and different points in time.<sup>29</sup>

On the basis of these findings, Kaufhold comes to the interesting, if negative, conclusion, that in Germany between 1650 and 1800,

The development of the industrial region was not determined by any single branch of production (not even linen, despite its importance),

nor by urban or rural industry alone (despite the importance of the latter), nor by any particular form of enterprise (not even domestic industry or putting-out, despite the fact that they were very widespread). When they became sufficiently widespread – and not alone, but in typical combinations – these factors influenced the development of particular regions or groups of regions, sometimes considerably, but they did not become general causes of development.<sup>30</sup>

The theory of proto-industrialization, with its stress on rural domestic industry and a unilineal progression toward the putting-out system, offers ‘a too one-sided and short-sighted explanation’.<sup>31</sup>

But when it comes to formulating a ‘typology’ or positive explanation to account for why industrial regions arose in certain parts of Germany but not in others, or why some grew and others declined, Kaufhold is much more hesitant. His empirical survey leads him to conclude that three ‘location factors’ were essential: labour supply, raw materials, and market outlets. Capital, technology, and state industrial policies were much less important.<sup>32</sup> However, he finds that no general conclusions can be drawn about which regions of Germany could be expected to supply such ‘location factors’ in the requisite amounts, or why. Industrial labour supply was affected by population growth, agriculture, social stratification, and entry restrictions (such as guild rules).<sup>33</sup> Raw materials were sometimes produced within German industrial regions, but often imported.<sup>34</sup> Markets for German manufactures were created through growing domestic demand, European outlets, the growth of overseas colonies, improvements in transportation, and the entrepreneurial activities of merchants.<sup>35</sup> In short, Kaufhold’s survey provides enormously useful empirical generalizations, but no explanation for why German industries were located where they were, and why they developed as they did. Must we content ourselves with empirical descriptions, or are there more general explanatory tools available which can help to make sense of the heterogeneity in early modern German industrial development?

There is, in fact, a single general concept underlying all the ‘location factors’ one meets in descriptive accounts of early modern industries. This is *opportunity cost*, the central idea behind the economic theory of supply, and thus the fundamental explanation for why certain European regions and not others supplied industrial goods in the early modern period. All forms of production require inputs of resources – labour, capital, land, raw materials. Because each of these resources could be used in other ways, it has what economists call an ‘opportunity cost’ – a cost in terms of the next-best alternative use for it. ‘Opportunity cost’ is a more useful way of thinking about costs than simple money costs, because it takes into account costs which are not traded in markets or expressed in money terms. In early modern Europe many goods were not formally traded in markets and thus did not have money prices; this was especially the case for labour, the most

important input for early modern industry. But all inputs had opportunity costs: labour which a household allocated to weaving could not simultaneously be used for farming; land used for growing flax could not simultaneously be used for growing grain;<sup>36</sup> capital invested in wool or looms could not be used to buy cattle or build a barn. So, for example, opportunity costs explain why industries often arose in barren, mountainous regions: the opportunity cost of allocating labour, land, and capital to industry was very low in terms of foregone agricultural income.

An important component of opportunity costs is *transactions costs*: costs incurred in all the transactions connected with obtaining inputs, moving the product along from one stage of production to the next, and selling it to the final customer. Transactions costs include costs of transportation, negotiation, information, contract enforcement, protection from coercion, and so on. Chapter 4 of this volume illustrates the enormous addition to the final price to customers caused simply by two of the most easily quantified transactions costs, those of transportation fees and customs charges. Other transactions costs, such as those incurred in preventing embezzlement of raw materials or conveying information about changes in demand from potential customers to producers, are harder to quantify but no less important.

Thinking about the ‘location factors’ for early modern industries in terms of costs gives us a powerful tool for understanding why industries arose in certain regions of Germany rather than others, and why different industries responded to changing circumstances in different ways. An industry was more likely to arise in a region where its particular mix of inputs and transactions was least costly. Once in existence, an industry organized production so as to minimize costs within the constraints imposed by the natural and social characteristics of the region. This did not even require conscious calculation on the part of producers: the grim realities of survival meant that if you produced at higher cost than spinners, weavers, or metal-workers in a neighbouring region, your products went unsold on export markets, your family went hungry, and you were not be able to go on producing. Even the protectionist legislation of cities and princes created only regional or, at most, national monopolies, and could not protect producers from cost competition on international export markets.<sup>37</sup> Poverty and scarcity alone ensured that cost mattered. What, then, determined the costs – and thus the location and development – of industries in early modern Germany?

## Industry and nature

Early modern industries were generally more dependent on nature than industries are nowadays. Because agriculture made up most of the economy, the opportunity cost of using resources in industry was strongly affected by the costs of using them in agriculture, and these in turn were powerfully affected by natural factors such as soil and climate. Because trade was still costly and primitive, industries were still very reliant on local inputs, and thus strongly affected by the natural endowments of the local region. In most early modern industries, relatively immobile inputs (such as raw materials and labour) made up a larger percentage of costs than mobile inputs (such as capital, technology, and knowhow); again, this made industries more dependent on local resource endowments. As a result, the costs of industrial production in a particular region were affected by the region's natural endowments – its climate, soil, natural resources, energy supplies, topographical barriers to transportation, location near trade routes, and so on.<sup>38</sup> The effect of local natural endowments on industrial cost may even have been higher in early modern Germany than in many other parts of western Europe, because trade faced more obstacles in Germany than elsewhere, and the geographical mobility of labour was often institutionally restricted (by ties of serfdom in the East, for example, or by community citizenship restrictions in the South). That is, the extent to which natural endowments influenced industry depended very much on the extent to which social arrangements increased (or reduced) the costs of moving raw materials and labour away from the place where they occurred 'naturally'.

Perhaps the most important way in which natural endowments affected the opportunity costs of industry, and thus its location and development, was through their influence on agriculture. Where soil and climate were such as to favour agriculture, this increased the opportunity costs of using any resource – labour, capital, or land – for industry instead. This accounts for Kaufhold's finding that German industrial regions, with a few exceptions, did not tend to be located in the fertile plains: eight of the nine great ranges of hills in Germany – the Swabian Jura, the Black Forest, the Eifel, the Sauerland, the Harz, the Sudeten, the Erzgebirge, and the Thuringian Forest – contained one or more industrial regions.<sup>39</sup> The less fertile soils and lower temperatures common at higher altitudes reduced potential agrarian yields, thereby lowering industrial opportunity costs. But a hilly location was not sufficient for the emergence of an industrial region, as is shown by the example of the non-industrialized Bohemian Forest in Bavaria. Nor was it necessary, as is shown by the location of some of the most important industrial regions in Germany in the fertile plains: the vigorous linen and silk region around Krefeld, Gladbach, and Rheydt in the

Rhineland; the important linen industry of the western Münsterland of Westphalia; and the linen region in Lower Saxony. This is not surprising, since there were many factors other than agricultural infertility which influenced the costs of industry.

Nature also clearly affected industrial costs through raw materials. Where nature provided existing deposits of raw materials (such as iron ore or wood), or favoured their cultivation (as with flax or wool), they would tend to be cheaper. Holding other factors constant, this would favour the rise of industries which used these materials. However, other factors, such as the cost of labour, were not always held constant. This made it profitable to sell natural raw materials to areas with low labour costs or other advantages instead of using them in industry locally. The existence of trade meant that natural endowments of raw materials were seldom sufficient in themselves to give rise to an industry.<sup>40</sup>

But they were very important for industries such as metals and glass, which used large volumes of heavy raw materials or fuels which were costly to transport from their 'natural' location.<sup>41</sup> Fuels became even more important for the iron industry during the sixteenth century with the spread of the 'indirect process', which required much higher heat levels, consuming more than 250 kilograms of charcoal to produce 100 kilograms of raw iron.<sup>42</sup> Accordingly, the German iron industries did arise in close proximity to ore deposits and/or forests: in the Thuringian Forest, the Harz, Upper Saxony, Upper Silesia, the Upper Palatinate, the Saar and Neuwieder Becken in the central Rhineland, and in several areas of the northern Rhineland.<sup>43</sup> The inexorable rise in costs triggered by exhaustion of ore or wood deposits led to the decline of many of the great sixteenth-century German iron regions (such as the Upper Palatinate) around 1600, and the emergence of new centres (such as the Harz and Silesia) in the course of the seventeenth and eighteenth centuries.<sup>44</sup> Iron-processing was often very dependent on water-power to drive the forge-hammers, and thus smithies tended to be located along waterways. As Reininghaus observes, this prevented iron-goods industries from arising in the north German plains, where the waterways were too slow to drive hammers; wind power did not provide an adequate substitute.<sup>45</sup> Glass, too, required large quantities of three heavy raw materials: lime, siliceous earth or quartz sand, and wood for potash and (especially) fuel. The scarcity of these materials meant that the glass industry was even more 'mobile' than the iron industry: as the example of Hesse shows, glass areas were worked out very quickly indeed. As a consequence, glass alone rarely determined the emergence or survival of an industrial region.<sup>46</sup>

As the early modern period progressed, however, even the metal and glass industries depended less on local raw materials and more on imports. As early as the sixteenth century, many German iron-producing regions were supplying raw and half-finished iron and steel to separate iron-processing regions, and this tendency had become almost ubiquitous by the eighteenth

century. The iron-processing regions of Mark and Berg in the Rhineland, for instance, obtained raw iron and steel and half-finished goods from separate (although not very distant) regions in the Siegerland and the principality of Nassau-Dillenburg. Glass, too, was transported from its production areas (like those in the Upper Palatinate) to separate nearby centres of polishing and mirror production (in Nuremberg and Fürth). Charcoal was increasingly imported into iron-smelting areas: in the eighteenth century, as they ran out of wood, the Harz imported charcoal from the Solling, and the Siegerland from the Sauerland of Westphalia.<sup>47</sup> Social arrangements could help make up for natural scarcity: thus the Siegerland managed to sustain an expanding metal industry between 1650 and 1800 despite scarcity of charcoal, through the *Haubergwirtschaft*, a system of collective administration and rational cultivation of forests.<sup>48</sup> In a number of German territories, governments and communities re-planted the native deciduous trees with faster-growing conifers to replace fuel supplies more rapidly (as discussed in Chapter 1 of this volume). Thus not only natural endowments but also trade and the social organization of resource exploitation affected the costs of raw materials and fuels, and thus the location of industry.

Natural endowments were less important for textile industries, which used lighter and more easily tradeable raw materials, and little if any fuel. Silk and cotton could not in any case be economically cultivated in Germany; it was only the costs of flax, hemp, and wool which could be affected by natural variations among German regions.<sup>49</sup> Linen production did arise in those areas of Germany with the soils (lime and sand) and climate (cool and wet) required for growing flax and hemp: on a band running through northern Central Europe from the lower Rhineland through Westphalia, Saxony, northern Bohemia, and Silesia; and a smaller area in Swabia in the South.<sup>50</sup> Yet the Saxon Vogtland, although 'no less endowed with a favourable climate for flax culture . . . never developed a linen business of commercial significance' (although it did develop many other industries).<sup>51</sup> That is, natural endowments were not sufficient to bring a linen region into existence. Nor were they necessary to create one: during the early modern period, linen yarn began to be exported in huge volumes from regions where flax was cultivated and spun, to others which specialized in weaving, bleaching, lace-making, stocking-knitting, or producing any number of other fancy goods. Before 1600, Swabia was importing linen yarn from Austria, Bohemia, and Silesia, and by 1700 it was exporting yarn in bulk to Switzerland. The Wupper Valley and the county of Mark in the Rhineland imported yarn from Westphalia, Lower Saxony, Hesse, and Silesia, and sent their own woven and bleached goods to France for further processing into luxury items. Silesia imported low-quality yarn from Bohemia, Moravia, and Saxony, and exported high-quality *Lothgarn* to The Netherlands for lace-making. Upper Lusatia exported its own high-quality yarn to Holland and England, while its own weavers imported lower-quality yarn from Bohemia.<sup>52</sup> This enormous trade in linen yarn

reduced the importance of natural endowments in determining the location and development of German linen regions in the longer run.

The German woollen industries, too, initially grew up (during the fifteenth and sixteenth centuries) on the basis of indigenous sheep herds. The loss of many of these herds during the Thirty Years War is supposed to have been the cause of the decline of the German woollen industry. Certainly, those few German woollen regions which survived increasingly relied on imports of raw materials.<sup>53</sup> Thus Monschau in the Eifel area of the northern Rhineland became famed for producing some of the finest woollens in Europe, using imports of Spanish Merino wool.<sup>54</sup> The production of worsteds, lighter and cheaper cloths made of long-stranded combed wool rather than the shorter carded wool used for woollens, also initially established itself in areas with indigenous supplies of wool: in the Württemberg Black Forest from c. 1560 onward, and in Gera and the Obereichsfeld in Thuringia in the later seventeenth century. However, all three main German worsted regions increasingly depended on raw-wool imports, the Württemberg Black Forest from as early as 1600.<sup>55</sup>

Because industrial regions, being export-orientated, depended on trade to sell their output and obtain foodstuffs, and also increasingly imported raw materials, their costs were affected by geographical location. Ease of transportation or proximity to trade routes or trade fairs meant lower transactions costs. This was more important for goods in which transport and other transactions costs made up a higher proportion of the final price at which the wares could be sold: transactions costs thus mattered much more for cheap mass-market wares than for expensive luxury products, and more for heavy goods (such as metals) than for light wares (such as textiles). The enormously lower costs of water transportation ought to have given advantages to those German regions located along the short northern coastline and on the five great rivers (the Rhine, the Danube, the Weser, the Elbe, and the Oder). But the location and development of German industrial regions does not clearly follow the availability of water transportation. The North Sea coast and neighbouring territories were among the least industrialized parts of Germany. The Elbe flowed through highly industrialized Saxony, but also through almost completely non-industrialized Brandenburg. The Rhine flowed through the highly industrialized Rhineland, but also through the non-industrialized areas of Baden and Anterior Austria in the far South-West. Württemberg did not extend as far as the Danube, and during most of the early modern period the Württemberg stretch of the Neckar was not navigable.<sup>56</sup> Nevertheless, Württemberg was more highly industrialized than neighbouring Bavaria (with the Danube) or Baden (with the Rhine). The Westphalian county of Ravensberg became and remained an important linen region despite the fact that its distance from trade routes made food imports too costly, so that it had to produce its own grain supply.<sup>57</sup> The Monschau woollen industry became 'the first and most renowned in Europe', despite the extraordinarily high transport costs caused by its

difficult location; admittedly, this was partly due to the fact that it produced very high-quality cloths, for which transportation costs comprised a relatively low share of the (high) final price which could be charged to customers.<sup>58</sup> The stimulus which trade provided to industry appears to have depended as much on reduction in transactions costs through the activities of merchants – their seeking out of low-cost transportation and market links, their transmission of information from customer to producer, their financing of the delay between production and sales – as on that engendered by natural location. Based on the geographical distribution of German industrial regions, Kaufhold concludes that ‘the great trade routes oriented themselves to the main locations of industry, more than the other way around’.<sup>59</sup>

Germany’s natural resource endowments did contribute to the location and development of its industries before 1800. But their influence was circumscribed. Natural resources were more important for industries requiring large volumes of heavy raw materials and fuels than for those with lighter and easily traded inputs. They were more important for earlier stages of production (such as smelting or spinning) than for later ones (such as smithing or weaving). Above all, the influence of nature in a given case depended on social arrangements, especially trade. As trade became less costly and more widespread, local endowments declined in importance relative to other influences on costs. Thus industries arose between 1600 and 1800 in areas of Germany without obvious natural advantages, while other areas endowed with cheap raw materials, good energy supplies, favourable location on waterways, and infertile soils for agriculture failed to develop into industrial regions. Nature alone was neither necessary nor sufficient to cause industries to arise in particular regions or develop in specific ways.

This should not be surprising. People make economic decisions within a framework defined not just by nature but by society. That is, the costs of any economic activity – including industry – are affected by the *social* and *institutional* framework governing the transactions through which inputs are obtained, production is organized, and output is sold. It is sometimes assumed that markets are the most important social institutions governing economic activity. But in most societies markets operate within the constraints imposed by other social institutions. This was certainly the case in early modern Germany. Markets in labour, land, capital, raw materials, foodstuffs, and industrial output – and thus the costs of all these goods – were constrained by a variety of non-market institutions. In the countryside, where a great deal of German industrial production occurred before 1800, markets were regulated by village communities and manorial systems with powerful landlords. In towns and cities, where most trade and a good share of industrial production still took place, markets were constrained by the powers and privileges of the towns themselves and their constituent craft guilds and merchant companies. In both town and countryside, markets were increasingly regulated by the expanding early modern state. In

Germany territorial fragmentation meant that social institutions evolved differently, and varied enormously, over short distances.<sup>60</sup> The ways in which markets were formally and informally regulated by other social institutions affected the costs, and thus the location and development, of most industries in early modern Germany.

## Industry and rural society

By 1800 a larger share of industrial production was taking place in the countryside than had been the case in 1600, partly because of urban decline and partly because of faster rural growth.<sup>61</sup> Rural economic activity was regulated by landlords within the manorial system, and by village communities. Although formally organized around agrarian production, these institutions, because they regulated the use of labour, land, and capital in agriculture, inevitably affected the opportunity cost of these inputs in industry. Landlords and communities remained powerful in most parts of Germany until the later eighteenth century, to a much later date than, for example, in Flanders or in England.<sup>62</sup> But the precise ways in which they regulated the rural economy varied enormously from one German territory to the next, in a way which cannot be reduced merely to the distinction between the two ideal-typical German agrarian systems, the eastern *Gutsherrschaft* (with powerful landlords, strong ties of serfdom, heavy labour dues, and large demesne operations) and the western *Grundherrschaft* (with weak landlords, few ties of serfdom, rents in cash or kind, and little demesne activity).

This is illustrated by the relationship between early industrialization and *Gutsherrschaft*. It is often argued that *Gutsherrschaft* – or indeed any agrarian system which gave substantial powers to landlords – was incompatible with the expansion of early modern industry.<sup>63</sup> It is certainly true that institutional powers could enable landlords, if they desired, to prevent rural people from engaging in industry. In many parts of northern and eastern Germany, landlords did precisely this. These were fertile regions offering high returns to agriculture; thus when peasants sought to shift to industry, it was not because it was more productive than agriculture but because it was less subject to landlord extortion. High agrarian productivity meant landlords had little incentive to incur the costs of redefining their manorial powers to enable them to extort dues from peasants’ industrial work. But in less fertile regions the incentives were different. Here, people really did produce more valuable output working in industry than in agriculture, and as long as landlords could extend their powers to profit from it, they had an incentive to let their rural subjects shift to industry. The

requisite widening of landlords' powers was ensured during the so-called 'second serfdom' – the state-supported expansion in landlord powers in most areas of *Gutsherrschaft* from the later sixteenth century on. This combination of agricultural infertility and 'second serfdom' permitted the rise of export-orientated industrial regions under conditions of *Gutsherrschaft* in many parts of eastern and Central Europe: in Silesia (ruled by Austria until annexed by Prussia in 1740–2), Bohemia, Moravia, Poland, Bulgaria, and parts of Russia.<sup>64</sup>

Originally it was argued that these 'feudal proto-industries' arose only where there was a weakening or deviation from 'classic' *Gutsherrschaft*, characterized by relations of serfdom defined according to strict legal criteria, and by large demesne farms specializing in grain production.<sup>65</sup> Empirical studies, however, suggest that the only 'deviation' from *Gutsherrschaft* in proto-industrial regions of Central and eastern Europe was that landlords exploited their institutional powers in the industrial sector instead of (or as well as) in agriculture. The *Gutswirtschaft* (demesne economy) did not disappear, but rather expanded to include other rural activities (in addition to the classic grain farming): mining, smelting, glass-making, flax-growing, spinning, and weaving, whether in putting-out systems or in manufactories or 'proto-factories' on the feudal estate. Landlords were no weaker in industrial than in agrarian regions of *Gutsherrschaft*. On the contrary, they permitted industries to arise precisely because their expanding extra-economic powers enabled them to extract revenues from them: through loom fees, selling monopoly rights over peasants' output to foreign merchants, compelling workers to buy demesne flax at above-market prices, encouraging their rural subjects to shift to industry by restricting access to land, levying labour dues in the form of transporting ores and fuels and even sometimes spinning flax, using ties of serfdom to recruit 'forced wage-labour' at below-market wages, and many other strategies.<sup>66</sup> It was precisely their low labour costs, forcibly maintained through landlords' extra-economic powers, which made the export industries in areas such as Silesia and Bohemia so competitive internationally. What mattered for industry was not whether landlords were strong or not, but the precise powers they had and how they used them, and these varied from one region of *Gutsherrschaft* to the next.

It was only in the longer term that the powers of landlords under *Gutsherrschaft*, which in Silesia, for instance, kept flax and labour costs so low and the region's yarn and linen exports so competitive, became an obstacle to industrial development. Beginning in the 1770s, the challenge of English cotton and mechanized production could not be met by cheap flax and labour alone, but required technical adaptation, skill, and capital. But technological changes in linen production were opposed by Silesian landlords concerned to maintain the revenue stream from their serf weavers; the Prussian state instituted legal prohibitions on new practices. Capital flowed into landownership rather than industrial machines, because of the

enormous legal privileges associated with it under *Gutsherrschaft*. In the last decades of the eighteenth century, as the Saxon and Rhenish linen industries began – however gradually – to shift to cotton and machines, the greatest German linen industry of all, that of Silesia, slid inexorably into crisis and ultimate de-industrialization.<sup>67</sup> In the words of Herbert Kisch:

In many ways the Silesian linen trades corroborate the contention . . . that domestic industry was not always, as might be generalized from the English case, an agent of progress; rather, where domestic trades have been appendices of the feudal order they have had the opposite effect.<sup>68</sup>

Strong landlord powers were not incompatible with export-oriented domestic industry, but they were incompatible with long-term economic growth.

The more limited landlord powers characteristic of *Grundherrschaft* in Germany west of the Elbe could not artificially lower labour costs, but they permitted (or were associated with) other cost advantages: labour markets not constrained by serfdom, more flexible land use, less incentive for capital to flow into landholding, livelier commerce, and more open rural markets. The rise of export-orientated industries in areas such as Saxony, the Rhineland, and Württemberg benefited from the relatively limited powers of landlords there to regulate rural society. Peter Kriedte finds that silk processing tended to arise in those villages around Krefeld in the Rhineland where landlords were least restrictive, a pattern also observed in parts of England and Switzerland.<sup>69</sup> But there were also areas of *Grundherrschaft*, such as Westphalia, where although landlord powers did not altogether prevent the rise of export-orientated linen production, they did exercise a limiting influence on it. Thus in parts of Westphalia, landlords continued to exercise significant influence over land use and expansion of the rural industrial labour force, at least until the abolition of the *Acker-Marken-Wirtschaft* (the collective system of regulating agriculture, which often involved important powers for landlords as well as peasant communities). The *Acker-Marken-Wirtschaft* was not abolished until the 1770s in the Prussian-ruled county of Ravensberg, and not until around 1810 in the neighbouring prince-bishopric of Osnabrück. Wolfgang Mager ascribes Ravensberg's ultimately successful factory industrialization in the nineteenth century, while most other Westphalian linen districts de-industrialized, partly to the early breakdown of the Ravensberg *Acker-Marken-Wirtschaft*.<sup>70</sup> Thus even west of the Elbe landlord powers, while not preventing the rise of export-oriented industries, did constrain their growth in some regions until the last decades of the Old Empire, and set certain regions on divergent paths of industrialization.

The other main social institution regulating the rural economy was the village community. Originally it was argued that export-orientated rural industries only arose where communities were weak.<sup>71</sup> This seemed to be

borne out by early research showing proto-industries arising in weak communities in preference to strong ones, in parts of England and Switzerland.<sup>72</sup> But later research has shown that although strong community institutions did increase the costs of industries, it did not prevent them from arising in regions with other cost advantages.<sup>73</sup> Communities, too, varied in strength from one German territory to the next, depending on the local institutional legacy, as well as the changing powers of landlords and princes. With regional exceptions, they tended to be weaker in areas of *Gutsherrschaft* or effective absolutism, and strong where landlords were weak or princes supported local village powers in exchange for fiscal and administrative support.<sup>74</sup>

The cost advantages of weak communities are shown by the concentration and vigour of industry in Saxony and the Rhineland, where village institutions were often as weak as in England or the Low Countries. In many parts of Saxony village communities began to weaken in the early sixteenth century, and received little support from the state: settlement and rural factor markets began to operate relatively freely, and rural export industries proliferated.<sup>75</sup> In many areas of the Rhineland, as well, village communities appear to have been relatively powerless even before rural industries arose in the sixteenth century.<sup>76</sup> But in this, as in other aspects of their social organization, the Rhineland and Saxony were exceptional.

In other German industrial regions, village institutions were on the whole much stronger. Although they did not wholly prevent the rise of export industries, they imposed costs which had enduring effects. Thus in the linen region of Ravensberg in Westphalia, Wolfgang Mager identifies 'the effectiveness of the communal *Markenwirtschaft*' as one of 'the two basic factors of economic and social retardation', which 'lasted until the late eighteenth or early nineteenth century'.<sup>77</sup> The *Markenwirtschaft* was a communally organized agrarian system imposing a close regulation of land and labour markets as well as many other economic practices; and it was only gradually, in the course of the eighteenth century, that the Prussian state began to permit infringements on it in Ravensberg. The forcible abolition of communal controls in the 1770s unleashed rapid industrial growth, creating a proletarianized labour force before international linen demand fell, and giving Ravensberg the industrial momentum to survive until mechanization became possible in the 1850s. In the neighbouring linen region of Osnabrück, by contrast, the prince-bishops maintained the *Markenwirtschaft* until c. 1810; this constrained industrial growth and, in the view of both Wolfgang Mager and Jürgen Schlumbohm, helped to set Osnabrück on the path to de-industrialization.<sup>78</sup>

In the German South, communities were notoriously strong until well into the nineteenth century, restricting marriage and settlement, regulating markets in most commodities, and enforcing the privileges of rural guilds.<sup>79</sup> Although these constraints increased costs and reduced flexibility, they did not altogether exclude the growth of domestic industries where other local

advantages were present. In Württemberg, for instance, partible inheritance generated plentiful labour, manorial restrictions were weak, and the great south German trading cities were near. Consequently, the Swabian Jura (with favourable conditions for flax cultivation) developed into a linen region, while the margins of the eastern Black Forest (with infertile soils, indigenous sheep-raising, plentiful water-power, and a tradition of woollen manufacturing) became a dense centre of worsted exports. Village communities remained strong, and it was not until the later eighteenth century that their rigidities – among others – began to weigh heavily on the two great Württemberg industrial regions, contributing to industrial stagnation, technological backwardness, and a failure to adapt to the challenges of cotton and mechanization.<sup>80</sup> In many regions of Germany, therefore, the powers of rural communities, like the powers of landlords, did not prevent the rise of export industries between 1600 and 1800, but did constrain their development.

## Industry and urban society

Although rural industry grew enormously in significance between 1600 and 1800 towns retained a variety of important industrial functions, something not always recognized in the theories of proto-industrialization, which tend to regard towns as simply the location of the merchants who organized the rural putting-out systems.<sup>81</sup> Towns certainly did play the dominant role in organizing the trade in industrial raw materials, food for the industrial population, and the products they manufactured, as well as in supplying the capital to finance the gap between purchasing inputs and selling outputs. This was especially the case in Germany, where, although rural industrial traders did arise, in most territories until the late eighteenth century their illegal status limited their operations (as we will see below). But towns were also where *production* took place, especially for certain industries and stages of manufacturing: for processes involving expensive raw materials, such as silk, urban location reduced embezzlement; for those requiring a highly skilled labour-force, such as weaving fine woollens, towns facilitated training and monitoring; for those requiring rapid response to changes in fashion, such as dyeing and finishing textiles, towns eased information transmission; and for those using large pieces of capital equipment, such as calico printing, towns provided a central location. Finally, they functioned as wealthy and concentrated pools of consumption and demand, and thus as important markets for rural production. Because towns played this range of essential roles in early modern industry, urban institutions affected industrial costs.

Originally, based on the examples of England and the Low Countries, it was argued that proto-industrialization led to the breakdown of urban industrial institutions: the powers of towns over the countryside, and the legal privileges of guilds and merchant companies.<sup>82</sup> But subsequent research has shown that the English and Low Countries pattern whereby urban institutions broke down at the same time as industrial regions emerged in the sixteenth century was the exception, not the rule.<sup>83</sup> The only areas of Germany in which the industrial privileges of towns, guilds, and merchant companies played as little role as in the Low Countries and England were parts of the northern Rhineland, especially the county of Moers (around Krefeld) and the duchy of Jülich. The enormously successful linen and silk city of Krefeld had no institutional powers over the countryside, and its industrial producers and merchants enjoyed no corporate privileges. This was partly because of Krefeld's quasi-village origins (with a population of only about 600 in 1650), and partly because it was ruled by the Dutch princes of Orange according to *laissez-faire* economic policies until 1702. Krefeld merchants only began to obtain monopolies and privileges during Prussian rule in the eighteenth century.<sup>84</sup> The nearby duchy of Jülich had a constitutional tradition of *Gewerbefreiheit* (freedom from guilds), which attracted entrepreneurial Protestant refugees to Monschau in the sixteenth century, turning it into the foremost fine woollen centre in Germany. Not until the mid-eighteenth century did producers seek to establish guilds; the merchants responded by establishing the so-called *Feine Gewandschaft*, a corporate group which opposed the producers, lobbied the state, and tried to limit entry to the trade.<sup>85</sup>

But this relative lack of urban industrial regulations and corporate privileges was exceptional, even for the Rhineland. The woollen industry of Aachen stagnated in the eighteenth century until guild restrictions on production were removed in 1798, while neighbouring Burtscheid, whose guilds had declined in the seventeenth century, flourished.<sup>86</sup> In the Wupper Valley, the dukes of Berg in 1527 granted state privileges over bleaching and trading linens to a powerful merchant company, the notorious Wuppertaler Garnnahrung, which was still regulating the regional textile industry in its own interests in the late eighteenth century. So effective and so onerous were the Garnnahrung privileges that the rural linen-weavers set up their own rural guild in 1738, which attempted to regulate the industry in its members' interests until abolished in 1783 through Garnnahrung opposition and army intervention.<sup>87</sup> Similar rural guilds were established elsewhere in the duchy of Berg, by producers of cutlery, scythes, and small iron wares in Solingen and Remscheid; new guilds were still being formed as late as the 1750s.<sup>88</sup>

It is sometimes argued that guilds in reality often failed to impose effective economic regulations: that they admitted outsiders freely, did not impose low wages on their employees, did not place constraints on the work of women or youths, did not restrict output or impose high prices on

customers, and did not resist new techniques and new production practices. Sometimes it is even claimed that guilds positively benefited the economy, through overcoming capital-market imperfections, maintaining quality standards, defending intellectual property rights, guiding and supervising the production process, and providing a low-cost framework for industrial conflict resolution.<sup>89</sup> Theoretical speculations such as these, about the neutral or even beneficial economic effects of guilds, can only be investigated through concrete, micro-level empirical research into the activities of particular guilds in particular industries. Such research has, as a rule, not yet been carried out.

Available studies of German industrial regions, however, do provide certain indications that the net effect of guilds and merchant companies, even in the relatively 'liberal' Rhineland industries, was often far from positive. Thus, for instance, the Remscheid scythe smiths' guild successfully resisted the introduction of water-driven scythe hammers in the eighteenth century.<sup>90</sup> The Solingen cutlery-makers' guild resisted new techniques, resulting in technological backwardness compared to western European competitors; bitter corporate conflicts further contributed to its stagnation toward the end of the eighteenth century.<sup>91</sup> Attempts by Brügelmann, a Wupper Valley merchant, to set up the first English-style spinning mill in Germany in 1782 confronted huge opposition from the Wuppertaler Garnnahrung and the rural weavers' guild; eventually he obtained a state monopoly concession, but built the mill outside the Wupper Valley. As late as 1792, the Garnnahrung was prosecuting one of its members who tried to set up a ribbon manufactory in Alsace.<sup>92</sup> Thus the continuing importance of corporate privileges during both 'proto-industrialization' and early factory industrialization probably did contribute to the industrial backwardness of even this most 'advanced' of German industrial regions in 1800.

In Saxony, too, urban and corporate privileges dogged the expansion of industry between 1600 and 1800. Until the Thirty Years War, linen-weaving was in many areas an urban monopoly; most linen was sold through collective *Zünftkäufe* ('guild purchases') made by foreign merchant-houses, particularly those of Nuremberg. Only in the course of the seventeenth century did Saxon linen production shift decisively to the countryside.<sup>93</sup> Even then, towns and guilds successfully asserted control over many aspects of production, not only for linen-weaving but also for lace- and trimmings-making, ribbon-weaving, and the emerging cotton industry. Thus new regional guilds were formed among the makers of trimmings and lace in the Erzgebirge-Vogtland in the late seventeenth and early eighteenth centuries.<sup>94</sup> The urban ribbon-makers' guilds of Lusatia obtained a state ban on ribbon mills, so strictly enforced that its repeal in 1765 was followed by a boom in rural production; again, this suggests that the guild regulations had exercised real – and negative – economic effects on rural production.<sup>95</sup> The emerging Vogtland cotton industry permitted rural spinners, but retained weaving as a closely regulated urban monopoly throughout much

of the eighteenth century, so that as late as 1786 two-thirds of muslin workers in the region around Plauen were still guilded.<sup>96</sup>

But it was the trade in industrial output that was particularly closely monopolized in Saxony by cities and guilds. Rural producers were legally obliged to sell their output through the towns and the urban merchant guilds in most Saxon industrial regions until the early nineteenth century; although illegal rural traders naturally emerged, their operations were limited by the risks and penalties of having to trade in the 'informal sector'.<sup>97</sup> Yet it was not the privileged urban merchants of Zittau and Löbau but illegal village traders who in the 1770s 'promoted the shift away from linen work to cotton' in Lusatia, and after 1800 'ventured into mechanical cotton spinning'.<sup>98</sup> In the Vogtland, rival guilds of cotton 'merchants' and 'manufacturers' were founded in 1764, bitterly contested all changes in the industry for the next 50 years, and retained valuable privileges until the 1840s. A state monopoly was still in force in 1805, and it was not until after 1817 that the structure of corporate privileges in the Vogtland cotton industry began gradually to be dismantled, permitting successful adaptation to English competition.<sup>99</sup>

In neighbouring Thuringia, in which a number of industrial regions arose between 1600 and 1800, towns were less powerful than in Saxony, but rural guilds appear to have been more widespread. Until the later eighteenth century, guild organizations dominated some or all stages of production among the small-iron-goods-makers in the principality of Schmalkalden,<sup>100</sup> the gun-builders of Suhl,<sup>101</sup> the knife-smiths of Ruhla in the Thuringian Forest,<sup>102</sup> the toymakers and slatemakers in the Meininger Oberland,<sup>103</sup> the stocking-knitters in the duchy of Weimar,<sup>104</sup> and the worsted-weavers in the Obereichsfeld.<sup>105</sup> Thuringian merchants also formed companies which enjoyed monopolies and other state privileges over export industries, such as the company formed in 1710 in the weapon-making industry of Zella and Mehlis in the Thuringian Forest,<sup>106</sup> or that formed with a ducal privilege in 1789 over the toymaking industry of the Meininger Oberland.<sup>107</sup> Again, these corporate organizations had real economic effects. Far from providing a framework for rapid resolution of costly economic conflicts, guilds themselves generated bitter struggles within industries: guild conflicts, for instance, contributed to the decline of the stocking-knitting industry of the duchy of Weimar between 1740 and 1760.<sup>108</sup> Far from failing to enforce restrictions on entry into practice or volume of output, the Obereichsfeld linen-weavers' guild constrained growth, as is shown by the fact that linen-weaving expanded in the Obereichsfeld only when the guild monopoly was removed in 1780.<sup>109</sup> Given this long survival of town, guild, and company privileges, it is not surprising that even in comparatively 'advanced' Saxony and Thuringia industry was less developed in 1800 than it was in western Europe.

In the Westphalian linen regions, too, the privileges of towns and urban merchants cast a long shadow over industrial development. The urban

linen-weavers' guilds lost their monopolies in the late seventeenth or early eighteenth century, and rural guilds did not arise.<sup>110</sup> But rural spinners and weavers were obliged by law to sell yarn and wool through *Leggen* (inspection offices) in the towns. This turned the linen export trade into a legal monopoly of urban merchants; in some towns, such as Bielefeld, the linen merchants established a privileged company.<sup>111</sup> Most of the Westphalian *Leggen* were strengthened by princes in the 1770s, and survived into the nineteenth century.<sup>112</sup> Although there was some rural smuggling, Schlumbohm has estimated that the majority of linen produced between the 1770s and the mid-nineteenth century in the prince-bishopric of Osnabrück, for instance, passed through the *Legge*.<sup>113</sup> The successful transition to factory industry in the county of Ravensberg around 1850, while other Westphalian linen regions (such as Osnabrück) de-industrialized, is ascribed partly to the less thorough enforcement of the *Legge*, permitting black-market operations by illegal rural traders.<sup>114</sup> Even so, the privileged company of linen merchants in Bielefeld delayed mechanization for decades, and boycotted the first spinning mill in 1852; the second mill was established in 1856 only with state assistance and foreign managers.<sup>115</sup>

In Württemberg, urban privileges took a different form: towns had few powers over the countryside, but privileged merchant companies and 'regional' (urban-rural) guilds exercised monopolies over both urban and rural industry. In the Württemberg Black Forest, worsted weavers were organized into district-level guilds with equal jurisdiction over both town and village producers, which closely regulated every aspect of production and were not abolished until long into the nineteenth century. From 1650 until 1797, weavers were obliged to sell all their cloths to a privileged company of merchant-dyers, the famous Calwer Zeughandlungskompagnie, at fixed quotas and prices. Bitter corporate conflicts attest to the real economic effectiveness of both guilds and company, and to the fact that they did not provide a framework for peaceful conflict resolution; if anything, they may have increased industrial conflict by creating monopoly rents for different groups to struggle over.<sup>116</sup> Further east, on the Swabian Jura, the linen-weavers in the districts of Urach, Heidenheim, and Blaubeuren were also organized into rural guilds until 1828, and until the 1790s were obliged to sell to privileged merchant companies under similar conditions to those prevailing in the Black Forest worsted industry.<sup>117</sup> Although territorial fragmentation and the proximity of Ulm facilitated smuggling, the economic impact of the company monopolies is shown not only by the generations of bitter conflict they evoked, but also by the fact that the Urach and Heidenheim companies were able to maintain clear price differentials relative to the 'free-market' prices in Ulm.<sup>118</sup> In the Black Forest, both guilds and merchant company controlled entry, output, employment, product selection, prices, and wages, and concertedly resisted competition and new techniques, resulting in the decline of worsted production after about 1800 and a late and difficult transition to factory production.<sup>119</sup> In the

Swabian Jura, company monopolies and state regulation prevented either privileged company merchants or illegal rural traders from amassing the physical or human capital to become the agents of factory industrialization; thus, far from overcoming capital market imperfections, corporate organizations helped to sustain them. The region of Urach failed to shift to cotton or mechanize production, and was only industrialized in the 1860s by outside entrepreneurs.<sup>120</sup> Only in the district of Heidenheim, where company regulation had begun to break down in the 1760s because of repeated bankruptcies, was flexibility sufficient for a gradual shift into cotton in the 1790s, and to mechanical production in the 1830s; even here, the linen-weavers' guild initially violently opposed the shift to cotton.<sup>121</sup> To an even greater extent than in other areas of Germany, therefore, industry in Württemberg was stagnating by 1800 partly because of the late survival of guild and merchant privileges.<sup>122</sup>

## Industry and the state in Germany

German industry was also affected by the state. Traditionally, two diametrically opposed views have prevailed about the role of the state in the growth of industry in early modern Europe. One view has been to take mercantilistic industrial policies at face value, and assume that the growing tendency for early modern princes to establish manufactories, subsidize industries, institute protectionist legislation, and set up elaborate structures of industrial regulation successfully encouraged industrialization between 1600 and 1800. In reaction against the many weaknesses of this view many economic historians, including the theorists of proto-industrialization, have almost totally ignored the state, restricting its role to guaranteeing market transactions and occasionally helping merchants coerce producers.<sup>123</sup> Neither view is wholly satisfactory. While early modern German princes' direct support of industry saw very mixed success, their indirect role, particularly in supporting (or breaking down) other institutions, was substantial.

Traditionally, accounts of the role of the state in early modern German industry have focused on the attempts made by many German princes to support specific industries directly, in accordance with the principles of cameralism (the German variant of mercantilism). Where such protectionist legislation freed industrial producers from taxation or conscription, granted them subsidies, or enforced lower-than-market prices for their labour or raw materials, it could lower their costs relative to those of less favoured producers, and enhance their ability to compete, at least in the short term. But in most cases, such cost-reducing privileges were combined with others

which increased costs: monopolies (leading to output restrictions and higher prices); restrictive practices (entry barriers, labour-market regulations, prohibitions on women's work); and resistance to (or outright prohibitions on) new techniques, new products, or new production practices.

The net effect of state support varied from industry to industry in Germany. On the whole, however, the vast majority of these attempts were costly failures, and many damaged other economic endeavours.<sup>124</sup> The Prussian princes in particular are famous for their persistent and expensive attempts to establish and protect luxury industries, especially in Berlin and Potsdam. However, deeper research reveals the many costs these policies imposed on other local economic activities and on Prussia's own Rhineland possessions, and the inefficiencies and corruption they fostered within the protected industries.<sup>125</sup> Their success was minimal: not a single industrial region developed in the central and eastern provinces of Prussia before 1800, and by the end of the eighteenth century it was cotton, the one branch almost wholly neglected by the state, which dominated Berlin's textile sector.<sup>126</sup> So notorious was the long, expensive, and futile record of royal support for the Berlin silk industry that the Comte de Mirabeau wrote in the 1790s, referring to the successful silk factories of Krefeld in the Rhineland, 'Unhappy those [factories] if ever a Prussian king should love them.'<sup>127</sup> The Prussian pattern was repeated elsewhere. In Baden, state foundations of privileged 'proto-factories' in Pforzheim and elsewhere failed to flourish, while the neighbouring Black Forest, neglected by the state, developed by 1800 into 'one of the most important German industrial regions'.<sup>128</sup> The Thuringian Forest was one of the most important glass-smelting regions of Germany, if not of Europe, yet new glassworks established with princely support in the early eighteenth century almost all failed because they were set up without considering fuel supplies.<sup>129</sup> Based on his survey of German industrial regions before 1800, Kaufhold concludes:

When the different industrial regions are inspected, it quickly emerges that the influence exerted on their development by cameralistic support for industry was generally not high. . . . [In] several regions there was state support for industry, but although this strengthened the position of industry, it did not decisively influence it. Above all, however, absence of state support did not have a negative effect on industry – if anything, the converse was the case. Several of the most important German industrial regions, such as those in the duchy of Berg, on the left bank of the lower Rhine, in the county of Mark, and almost all the linen regions, developed without state assistance, or with very little. In summary, it must be stressed that if one subtracts the state components from the picture of early modern German industrial regions . . . its basic lineaments remain unchanged.<sup>130</sup>

But although purposeful state intervention in industry seldom succeeded, state activity for non-economic purposes had massive indirect repercussions on many German industries. The annexation of Silesia by Prussia in 1740–2 set in motion a re-equilibration of the linen industry not just in Silesia itself, but also in neighbouring Saxony and Bohemia, with lasting repercussions for the whole 'linen triangle'.<sup>131</sup> The industries of the northern Rhineland were similarly disrupted in the 1790s, when much of the left bank came under French administration.<sup>132</sup> Most important of all, however, was state reinforcement or weakening of other social institutions. Especially from the Thirty Years War onward, government was impossible in most parts of Germany without the co-operation of other institutions: the central state granted and enforced the privileges of landlords, village communities, towns, guilds, and merchant companies in tacit exchange for their co-operation in taxation, state borrowing, conscription, regulation, and suppression of domestic discontent.<sup>133</sup>

The role of German princes in sustaining and shaping the powers of landlords and village communities is evident in the development of many German regions. In the central and eastern Prussian provinces, the landlord powers under *Gutsherrschaft*, which prevented the rural population from engaging in industrial activity, derived their strength and longevity from state support. The control of the Silesian linen industry by feudal landlords, endowing it with its extraordinarily low and competitive labour costs, was only possible because of state support for *Gutsherrschaft* during and after the 'second serfdom'. From the 1760s on, the *Landschaft* (a state credit institution) channelled almost all available capital in Silesia to the feudal landlords, thereby depriving industry of investment funds. The Hohenzollerns also prohibited linen mechanization in order to protect the profits landlords derived from their feudal powers over serf weavers.<sup>134</sup> The stance of the prince was also important for the powers of landlords and peasant communities under *Grundherrschaft*. In Westphalia the differing policies of the Hohenzollerns and the prince-bishops of Osnabrück toward manorial controls and the communal *Acker-Marken-Wirtschaft* led to divergent agrarian developments in Ravensberg and Osnabrück, with enduring repercussions for their linen industries.<sup>135</sup> In Württemberg, it was their symbiotic relationship with the state that sustained the powerful local communities well into the nineteenth century.<sup>136</sup>

Urban and corporate institutions, too, could exercise more effective internal regulation of industries with state support, even while their external powers were being surpassed by those of the state.<sup>137</sup> Guilds and merchant companies were increasingly concerned during the early modern period to gain state charters and government enforcement, and in return delivered taxes, loans, bribes, political support, and fiscally useful surveillance of industrial output and trade. In Württemberg, the guilds and merchant companies which monopolized different stages of the export-orientated linen and worsted industries expended enormous

resources over a period of centuries in lobbying the state to enforce and extend their privileges; when the merchant companies became unprofitable in the 1790s and sought to dissolve themselves, they encountered enormous state opposition.<sup>138</sup> In the Wupper Valley of the Rhineland, the state issued and enforced the privileges of both the Wuppertaler Garnnahrung and the rural linen-weavers' guild; government support for corporatism did not begin to wane until the 1780s.<sup>139</sup> The *Leggen* and urban merchant privileges in the Westphalian linen industries, and the privileges of Saxon merchant guilds over industrial exports, also relied heavily on state enforcement: where, as in Westphalia, the state supported these privileges, they were effectively enforced until the mid-nineteenth century; where, as in Saxony, it sought to reduce them, rural black-market trading became a source of entrepreneurial flexibility which favoured factory industrialization from the 1780s onwards.

In most Germany territories the state did not become powerful enough to begin to dispense with the support of traditional institutions – landlords, communities, privileged towns, guilds, and merchant companies – until, at earliest, the last decades of the eighteenth century. In Saxony, for instance, it was the growth of central state power which made possible the gradual withdrawal of state support for town and guild privileges. In the Vogtland it was not until 1817 that the government began to remove 'the prohibitions, monopoly rights and restrictions' which had hobbled competition and mechanization in the cotton industry. It was not until the 1840s that it became politically possible in Saxony to neutralize the guilds.<sup>140</sup> In Westphalia it was the strength of the Prussian state which enabled the agrarian reforms in the county of Ravensberg in the 1770s, which in turn created the industrial momentum for the regional linen industry to achieve factory industrialization in the 1850s. Less powerful states, such as – in very different ways – the prince-bishopric of Osnabrück in Westphalia or the duchy of Württemberg in the South remained more dependent on local interests into the nineteenth century, and traditional institutions did not begin to break down until after 1800.

The growth of the early modern state also led to rising public expenditures, making the state a major source of demand. In theory this could have had two effects on industry. On one hand, the demand pull of state expenditures could have drawn idle resources (unemployed labour, hoarded capital) into productive use. But this would only have occurred if the resources used for armies, fortifications, and princely courts were previously lying unused. If not, then state demand simply took away resources already being used in other productive activities; the sectors deprived of these resources would have been harmed rather than stimulated.<sup>141</sup> Both mechanisms are theoretically possible. Which one predominated in early modern Germany can only be answered empirically.

What would one expect to observe empirically, if the demand of the growing German states did mobilize idle resources rather than crowding

out existing uses for them, and thus did contribute to industrial growth? Most state spending was for military purposes, so one might expect the most highly militarized German territories to have had the liveliest industries. Accordingly, Brandenburg-Prussia provides most of the examples adduced in support of the view that state demand stimulated early industry: the *Königliches Lagerhaus*, a large textile manufactory established to supply the army in 1713; the *Montierungs-Reglement* of 1714, which stimulated raw-wool production and heavy-woollen-weaving by ordering that only domestic cloth should be used for military uniforms; the hugely profitable Prussian armaments firms.<sup>142</sup> But, as we have already seen, Brandenburg-Prussia, by far the most highly militarized German territory, was one of the least industrialized. Either military spending simply crowded out other, more productive uses for resources; or, even if there was a demand pull, it was not powerful enough to do more than foster a few, isolated manufactories producing directly for the army.

But perhaps military (or court) spending by large states such as Prussia provided a market for industries in other German territories? This seems unlikely, judging by the sectoral distribution of industrial growth in early modern Germany. If military demand played a stimulating role, one would expect to observe growth in the iron sector, weapons manufacturing, and heavy woollen textiles for uniforms. However, as can be seen in Table 9.1, only one of the 39 German industrial regions identified by Kaufhold (the area around Zella, Mehlis, and Suhl in the Thuringian Forest) depended on weapons production. Iron regions, part of whose output may have been exported to manufacture armaments elsewhere, made up a minority of German industrial regions. Much of the output of the most successful iron regions (such as those in the Rhineland) consisted of small metal goods for household use. Heavy woollen cloths, which might have been used for military uniforms, were produced only in three German industrial regions (the Reuß region of Thuringia, and Mark and Berg in the Rhineland), and even there were merely part of a broad palette of products. The same is true of court demand. If princely courts provided a crucial demand pull for early industry, one would expect to observe growth in luxury textiles (fine woollens and silk) and furnishings (porcelain, glass, mirrors, clocks, music boxes, and musical instruments). But comparatively few German industrial regions were based on such luxury products. Instead, the greatest industrial growth in early modern Germany was in cheap, light textiles (linen, worsteds, and cottons), and an enormous variety of smaller items (stockings, gloves, caps, lace, trimmings, cord, braid, embroidery, straw hats, toys, slates, needles, wire, brushes, spoons, pottery, cutlery, and small iron household goods) – which addressed neither military nor court demand, but the mass consumer market.

If demand did play an autonomous role in stimulating industry in early modern Germany, therefore, it came not from the state but from mass consumer markets, whether at home or abroad. There is a certain amount of

evidence that from the mid-seventeenth century onward people in parts of Europe (particularly England and the Low Countries) were indeed consuming more market-produced goods. This tendency can also be observed in Germany, although it appears to have accelerated only in the eighteenth century (as discussed in Chapters 4 and 11 of this volume). There is also evidence that more German people were engaging in market-orientated production, although a large proportion of agrarian and industrial production (particularly east of the Elbe) continued to be absorbed by the household, the community, and the feudal economy, and not to reach the market (as discussed in Chapter 3); when it did reach the market, the many barriers to trade quickly made many wares too expensive for the budgets of ordinary Germans.<sup>143</sup> But the causal connection between the growth in market-orientated consumption and the growth in market-orientated production is still obscure: did production grow because consumer demand grew (i.e., because of changing tastes), or because producers and merchants could supply ordinary consumers more cheaply with desirable goods (i.e., because of changing technology and prices)?<sup>144</sup> Much better empirical knowledge of the links between industrial production and consumption in early modern Germany, and Europe more widely, will be needed before we can begin to answer this question. It seems fairly clear, however, that in so far as demand did play any autonomous role, it emanated from ordinary consumers, especially those further down the social scale. There is little evidence that the state – whether the army or the court – played more than a peripheral role in providing markets for early modern German industries. If anything, state expenditures, by requiring high taxation, reduced the disposable income of ordinary consumers, thereby diminishing their ability to provide markets for industrial wares.

In German industry between 1600 and 1800, therefore, the state played a range of roles. Among these, probably the least important was its intentional, though not often effective, intervention to encourage industrial enterprises. State expenditures grew enormously, but provided no more than isolated demand stimuli for German industries, which depended much more on growing consumer markets at home and abroad. German states in this period were perpetually engaged in making war, taxing, capturing and losing territory, and enforcing customs barriers, and all of these activities shaped the international markets within which early export industries operated. But the principal way in which early modern German states affected industry was by helping to maintain and shape the various traditional institutions which had such a wide-ranging impact on most German industries. When these institutions did gradually become weaker at the end of the eighteenth century, it was often through the growth of the state rather than that of the market. In more cases than not, industrial producers merely exchanged the monopolies, privileges, and regulations of traditional social institutions for a different set of non-market institutional constraints laid down by the state; the thoroughgoing state regulation of industry remained

a distinguishing characteristic of the German path to factory industrialization in the nineteenth century.<sup>145</sup>

## Conclusion

The beginnings of industrialization in Germany, as elsewhere in Europe, are to be found not in the machines and factories of the industrial revolution, but in the busy landscapes of small-scale workers in textiles, metals, wood, and glass which sprang up throughout the continent after about 1500. Indeed, the origins of industry must be sought more widely still, in the proliferation of market-orientated farmers producing food surpluses, and the inventive diligence of small traders and large merchants in creating markets linking consumers with producers of food and manufactured wares in specialized regions otherwise unknown to one another. This process of regional specialization continued and accelerated during the early modern period throughout Europe, including in most parts of German-speaking Central Europe. Yet, while in the sixteenth century German industries had been vigorous and important, by 1800 Germany as a whole was an industrial backwater. Some historians ascribe this to the depredations of the Thirty Years War, others to foreign factory competition at the end of the eighteenth century. But the widely differing responses to these challenges in different parts of Germany suggest that internal factors may have been more important. This is borne out by the German experience of 'proto-industrialization', which did not follow a unilinear development path, but rather showed enormous regional variation.

Early modern industrial growth was distributed very unevenly across early modern Germany. On one hand there were very high concentrations of industry in Saxony-Thuringia, the Rhineland, south-west Germany, and Westphalia-Lower Saxony. On the other, there were wide expanses of Germany which were almost completely non-industrialized – in the far North and East (especially the central and eastern Prussian provinces) and in Bavaria. The crucial question is 'Why?'. Empirical surveys reveal a number of 'location factors' which had to be present for an industrial region to emerge. But they yield little by way of a general explanation for the location and development of industries in different parts of early modern Germany. A more promising approach is offered by consideration of the costs of the inputs and transactions required by industries, which were determined by varying natural and social features.

Germany was by no means under-endowed with natural features favouring industry. It had very significant metal ore deposits; considerable expanses of forest for fuel; some of the largest coal deposits in Europe (in

1800 still all but untapped); and favourable conditions for growing flax and hemp. Although its coastline was restricted, it had five great navigable inland rivers, and a number of partly usable lesser waterways. The southern Imperial Cities lay on the great overland trade routes from the Mediterranean, and Leipzig and Frankfurt an der Oder mediated trade from eastern to western Europe. Germany's industrial backwardness in 1800 cannot be ascribed, therefore, to lack of natural cost advantages. Moreover, as the early modern period progressed and trade expanded, German industries became increasingly independent of local natural-resource endowments.

But industrial costs were also strongly affected by social institutions. Owing to political fragmentation these varied greatly from one German region to the next; but as a general rule, traditional institutions – manorial systems with powerful landlords, village communities, privileged towns, guilds, and merchant companies – survived in Germany for a long time after they had broken down in other parts of western Europe. Partly, this was owing to the 'institutional hothouse' of the Thirty Years War (and the century of almost continual warfare that followed), during which repeated military crises forced German princes to grant and enforce privileges to powerful institutions and groups within their societies in exchange for fiscal, military, and political support. A large number of studies show that the costs and flexibility of industries in most parts of Germany were profoundly affected by the privileges of traditional institutions to the very end of the Old Empire. Even in the most 'advanced' areas – Saxony and the Rhineland – traditional institutions did not begin to break down until the late eighteenth century. Even then, they tended to be replaced not by markets, but by a framework of state regulation. Elsewhere, they lasted long into the nineteenth century, delaying industrialization in Westphalia until the 1850s, and in Württemberg and Silesia until the 1870s. In Bavaria and most parts of Prussia the social institutions which had prevented the emergence of industries in the period between 1600 and 1800 delayed factory industrialization until the very end of the nineteenth century. As a consequence, the characteristics of German industry in the early modern period – its relative retardation, its regional variation, and its pervasive regulation by corporate and state institutions – were mirrored, often in intensified form, during German factory industrialization of the nineteenth century.<sup>146</sup>

## Notes

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- 1 'Above-average' refers to the average for Germany in 1800; for a more detailed discussion of the concept of *Gewerbelandschaften* (translated in this chapter as 'industrial regions', but elsewhere sometimes as 'industrial countrysides' or 'industrial landscapes'), see Karl-Heinrich Kaufhold, 'Gewerbelandschaften in der frühen Neuzeit (1650–1800)', in H. Pohl, ed., *Gewerbe- und Industrielandschaften vom Spätmittelalter bis ins 20. Jahrhundert* (Stuttgart, 1986), pp. 112–202, here pp. 112ff.; and Wolfgang Mager, 'Proto-industrialization and Proto-industry: The Uses and Drawbacks of Two Concepts', *Continuity and Change*, 8/2 (1993), pp. 181–216, here pp. 181ff. Approaches toward the concept of *Gewerbelandschaften* can be found in the concept of 'rustikalisierte Industrie' ('ruralized industry') developed by Werner Sombart, *Der moderne Kapitalismus*, ii: *Das europäische Wirtschaftsleben im Zeitalter des Frühkapitalismus, vornehmlich im 16., 17. und 18. Jahrhundert* (2nd edn, Berlin, 1916), esp. chs 47 and 54, as well as by other members of the German Historical School of Political Economy.
- 2 See the account of these processes in Jan de Vries, *The Economy of Europe in an Age of Crisis, 1600–1750* (Cambridge, 1976), esp. pp. 33ff., 94ff., 149ff.; and Peter Kriedte, *Peasants, Landlords and Merchant Capitalists: Europe and the World Economy, 1500–1800* (Leamington Spa, 1983).
- 3 Wilfried Reininghaus, *Gewerbe in der frühen Neuzeit* (Munich, 1990), pp. 18–29; Kriedte, *Peasants*, pp. 32–9. W. Fischer et al., eds, *Handbuch der europäischen Wirtschafts- und Sozialgeschichte* (4 vols, Stuttgart, 1993), vols. iii and iv, provide basic surveys on this subject and the relevant literature, as does F.-W. Henning, *Handbuch der Wirtschafts- und Sozialgeschichte Deutschlands*, i: *Deutsche Wirtschafts- und Sozialgeschichte im Mittelalter und in der frühen Neuzeit* (Paderborn, 1991).
- 4 On the key role of the Upper German Free Imperial Cities in the trade between Mediterranean and northern Europe, see Hermann Kellenbenz, 'Le déclin de Venise et les relations économiques de Venise avec les marchés au nord des Alpes', in F. Braudel et al., eds, *Aspetti e cause della decadenza economica veneziana nel secolo XVII* (Venice, 1961), here esp. pp. 135–6. On the shift of the economic centre of gravity of Europe from Mediterranean to north Atlantic, see in general de Vries, *Economy*, pp. 113ff.; and Kriedte, *Peasants*, pp. 32–3, 70ff.
- 5 On the timing of German industrialization relative to that of other parts of Europe, and its variation among different German regions, see R. H. Tilly, 'Soll und Haben II: Wiederbegegnung mit der deutschen Wirtschafts- und Sozialgeschichte', in R. H. Tilly, *Kapital, Staat und sozialer Protest in der deutschen Industrialisierung* (Göttingen, 1980), pp. 228–51, here pp. 233–4; F. B. Tipton, *Regional Variations in the Economic Development of Germany during the Nineteenth Century* (Middletown, Conn., 1976); W. R. Lee, 'Economic Development and the State in Nineteenth-Century Germany', *EcHR* 2nd ser. 41 (1988), pp. 346–67, here pp. 347–50; A. S. Milward and S. B. Saul, *The Economic Development of Continental Europe, 1780–1870* (London, 1973), esp. pp. 365ff.
- 6 Kaufhold, 'Gewerbelandschaften', p. 173.
- 7 See e.g. H. Kamen, 'The Economic and Social Consequences of the Thirty Years War', *JMH* 29 (1968), pp. 44–61; F. L. Carsten, 'Was There an Economic Decline in Germany before the Thirty Years War?', *English Historical Review*, 71 (1956), pp. 240–7.
- 8 K. H. Wolff, 'Guildmaster into Millhand: The Industrialization of Linen and Cotton in Germany to 1850', *Textile History*, 10 (1979), pp. 7–74, pp. 18–20.

- 9 For a discussion of the workings of this process on the regional and local level, see S. C. Ogilvie, 'Germany and the Seventeenth-Century Crisis', *Historical Journal*, 35 (1992), 417–41; specifically on its agrarian aspects, see Kamen, 'Consequences', pp. 52ff.; on the indirect consequences of the war for German society and the growth of the power of the princes, see Chapters 5, 7 and 8 in this volume.
- 10 On responses to competition from cotton and mechanization in Germany, with some comparisons with Switzerland, see Wolff, 'Guildmaster', esp. pp. 60–2; see also Tipton, *Regional Variations*, *passim*.
- 11 Mendels invented the concept in his 1970 doctoral dissertation, later published as F. F. Mendels, *Industrialization and Population Pressure in Eighteenth-Century Flanders* (New York, 1981). A first version of the concept was proposed in a seminal article, F. F. Mendels, 'Proto-industrialization: The First Phase of the Industrialization Process', *Journal of Economic History*, 32 (1972), 241–61. It was further elaborated in F. F. Mendels, 'Proto-industrialization: Theory and Reality, General Report', in *Eighth International Economic History Congress, Budapest 1982, 'A' Themes* (Budapest, 1982), pp. 69–107, published in a revised and expanded French version as F. F. Mendels, 'Des industries rurales à la protoindustrialisation: Historique d'un changement de perspective', *Annales E.S.C.*, 39 (1984), 977–1008.
- 12 P. Kriedte, H. Medick, and J. Schlumbohm, *Industrialization before Industrialization: Rural Industry in the Genesis of Capitalism* (Cambridge, 1981), translation of the German original, P. Kriedte, H. Medick, and J. Schlumbohm, *Industrialisierung vor der Industrialisierung. Gewerbliche Warenproduktion auf dem Land in der Formationsperiode des Kapitalismus* (Göttingen, 1977).
- 13 For summaries of the various theories of proto-industrialization and the ensuing debate, see S. C. Ogilvie, 'Proto-industrialization in Europe', *Continuity and Change*, 8 (1993), pp. 159–79, pp. 159–62; and S. C. Ogilvie and M. Cerman, 'The Theories of Proto-industrialization', in S. C. Ogilvie and M. Cerman, eds, *European Proto-industrialization* (Cambridge, 1996), pp. 1–11.
- 14 On the demographic ramifications of proto-industrialization, see Mendels, 'Proto-industrialization', pp. 249–53 and *passim*; and Kriedte, Medick, and Schlumbohm, *Industrialization*, pp. 38–93.
- 15 On the breakdown of traditional institutions and their replacement by markets, see Mendels, *Industrialization*, pp. 16, 26; Mendels, 'Theory and Reality', p. 80; and Kriedte, Medick, and Schlumbohm, *Industrialization*, pp. 7–8, 13, 16–17, 22, 40, 106, 115, and 128.
- 16 Mendels, 'Proto-industrialization'; Mendels, 'Theory and Reality'; Kriedte, Medick, and Schlumbohm, *Industrialization*.
- 17 Although see the early criticisms of the concept of proto-industrialization by historians from both Germanies after the publication of Kriedte, Medick, and Schlumbohm, *Industrialisierung*, in 1977. From the former German Democratic Republic: J. Kuczynski, *Geschichte des Alltags des deutschen Volkes* (4 vols, Berlin, 1981), ii, esp. pp. 97ff., 105, 119ff.; Helga Schultz, "'Proto-industrialisierung" in der Manufakturperiode: Der Gegensatz von Theorie und Empirie', *JbWG* (1979), p. 4, pp. 187–95; Helga Schultz, 'Die Ausweitung des Landhandwerks vor der industriellen Revolution. Begünstigende Faktoren und Bedeutung für die "Protoindustrialisierung"', *JbWG* (1982), p. 3, pp. 79–90; Helga Schultz, "'Protoindustrialisierung" und Übergangsepoche vom Feudalismus zum Kapitalismus', *Zeitschrift für Geschichtswissenschaft*, 31 (1983), pp. 1079–91. From the Federal Republic

- of Germany: H. Linde, 'Proto-Industrialisierung: zur Justierung eines neuen Leitbegriffs der sozialgeschichtlichen Forschung', *GG* 6 (1980), pp. 103–24; E. Schremmer, 'Industrialisierung vor der Industrialisierung. Anmerkungen zu einem Konzept der Protoindustrialisierung,' *GG* 6 (1980), pp. 420–48; E. Schremmer, 'Proto-industrialisation: A Step Towards Industrialisation?', *JEEH* 10 (1981), pp. 653–70. See also the scepticism about the theories of proto-industrialization expressed by Kaufhold, 'Gewerblandschaften', esp. pp. 187, 196, 202; and by Mager, 'Proto-industrialization', pp. 181–8.
- 18 For a summary of research on demographic behaviour in German proto-industrial regions, see S. C. Ogilvie, 'Proto-industrialization in Germany', in Ogilvie and Cerman, eds, *European Proto-industrialization*, pp. 118–36, here pp. 126–9.
- 19 For a recent survey of the criticisms of the theories of proto-industrialization, see Ogilvie, 'Proto-industrialization in Europe', pp. 160–2; Ogilvie and Cerman, 'Theories', pp. 7–11; and S. C. Ogilvie and M. Cerman, 'Proto-industrialization, Economic Development and Social Change in Early Modern Europe', in Ogilvie and Cerman, eds, *European Proto-industrialization*, pp. 227–39. One example of a German region which continued to be proto-industrial is the area around Nuremberg (which remained a 'proto-industrial region' for more than four centuries); see e.g. Wolfgang von Stromer, 'Gewerbereviere und Protoindustrien in Spätmittelalter und Frühneuzeit', in Hans Pohl, ed., *Gewerbe- und Industrielandschaften vom Spätmittelalter bis ins 20. Jahrhundert* (Stuttgart, 1986), pp. 39–111.
- 20 See Ogilvie, 'Proto-industrialization in Europe', p. 176.
- 21 Regional variation in German proto-industrialization is discussed in detail in Ogilvie, 'Proto-industrialization in Germany'.
- 22 These are identified by Kaufhold, 'Gewerblandschaften', pp. 113–14, as causes for the 'unsatisfactory' state of research on early modern German industry.
- 23 *Ibid.*, pp. 114–16.
- 24 *Ibid.*, pp. 119–124.
- 25 *Ibid.*, pp. 142–3, 148.
- 26 *Ibid.*, p. 176.
- 27 *Ibid.*, p. 174–5.
- 28 *Ibid.*, pp. 175–8.
- 29 *Ibid.*, p. 179–81; the same finding emerges from case studies of German proto-industrialization, as summarized in Ogilvie, 'Proto-industrialization in Germany', p. 131, and – for the 16th century – from the recent survey of putting-out systems and large industrial concerns in Germany by Rudolf Holbach, *Frühformen von Verlag und Grossbetrieb in der Gewerblichen Produktion (13.-16. Jahrhundert)* (Stuttgart, 1994).
- 30 Kaufhold, 'Gewerblandschaften', pp. 186–7.
- 31 *Ibid.*, p. 187.
- 32 *Ibid.*
- 33 *Ibid.*, pp. 188–90.
- 34 *Ibid.*, pp. 191–3.
- 35 *Ibid.*, pp. 191–6.
- 36 Although land could be switched from one crop to the other in a complementary fashion, as in the Westphalian county of Ravensberg, where farmers cultivated both grain for food and flax for the local linen industry; see W. Mager, 'Protoindustrialisierung und agrarisch-heimgewerbliche Verflechtung in Ravensberg während der Frühen Neuzeit. Studien zu einer Gesellschaftsformation im Übergang', *GG* 8 (1982), 435–74.

- 37 Protectionist legislation could sometimes reduce costs, in so far as it provided tax breaks, subsidies, state loans, or regulations keeping input costs artificially low. However, in so far as it established and supported monopolistic privileges, protectionist legislation increased costs by enabling existing producers to restrict output, maintain higher prices, prevent the employment of women, youths, and new entrants, and block the use of new techniques and production practices. For a detailed discussion of these issues, and an assessment of the net effect on industrial costs and development, see pp. 290–6 below.
- 38 The dependence of early modern industries on nature is discussed in Reininghaus, *Gewerbe*, pp. 11ff. One of the most important German contributions to the proto-industrialization debate also stresses the technical requirements of different industries, products, and operations, and the influence these exerted on the location, organization, and development of proto-industries: see Mager, 'Proto-industrialization', pp. 188ff.
- 39 Kaufhold, 'Gewerblandschaften', pp. 175–6.
- 40 This is also the conclusion reached by Kaufhold, 'Gewerblandschaften', p. 193, where he points out that although some German industrial regions were raw-material-oriented, as time passed a substantial trade in raw materials, fuels, and half-finished products developed among different German regions.
- 41 See H. Kellenbenz, 'Europäisches Eisen. Produktion – Verarbeitung – Handel (vom Ende des Mittelalters bis ins 18. Jahrhundert)', in H. Kellenbenz, ed., *Schwerpunkte der Eisengewinnung und Eisenverarbeitung in Europa, 1500–1650* (Cologne/Vienna, 1974), pp. 397–452; the importance of fuels in particular is emphasized by Mager, 'Proto-industrialization', p. 199.
- 42 Reininghaus, *Gewerbe*, p. 20.
- 43 Kellenbenz, 'Europäisches Eisen'; Kaufhold, 'Gewerblandschaften', pp. 171–3; Reininghaus, *Gewerbe*, pp. 11, 18–20.
- 44 Kellenbenz, 'Europäisches Eisen'; R. Stahlschmidt, 'Eisenverarbeitende Gewerbe in Süd- und Westdeutschland. Ein Forschungsbericht', in W. Kroker and E. Westermann, *Montanwirtschaft Mitteleuropas vom 12. bis 17. Jahrhundert. Stand, Wege und Aufgaben der Forschung* (Bochum, 1984); Reininghaus, *Gewerbe*, p. 19; Kaufhold, 'Gewerblandschaften', pp. 131, 140–1.
- 45 Reininghaus, *Gewerbe*, p. 11.
- 46 *Ibid.*, pp. 11, 43–4; F. Lerner, *Geschichte des deutschen Glaserhandwerks* (2nd edn., Schorndorf, 1981).
- 47 Kaufhold, 'Gewerblandschaften', pp. 182, 192.
- 48 Fritz Schulte, *Die Entwicklung der gewerblichen Wirtschaft in Rheinland-Westfalen im 18. Jahrhundert* (Cologne, 1959), pp. 25f.; Kaufhold, 'Gewerblandschaften', p. 156.
- 49 Despite the costly Prussian state policy of encouraging the cultivation of mulberry trees and the breeding of silkworms, so little raw silk was produced in Germany that it was wholly without economic significance; see Kaufhold, 'Gewerblandschaften', p. 193 n. 358.
- 50 Reininghaus, *Gewerbe*, p. 27; Wolff, 'Guildmaster', pp. 15–18, esp. maps on pp. 16–17.
- 51 *Ibid.*, p. 36.
- 52 E. Harder-Gersdorff, 'Leinen-Regionen im Vorfeld und im Verlauf der Industrialisierung (1780–1914)', in Pohl, ed., *Gewerbe- und Industrielandschaften*, pp. 203–53; A. J. Warden, *The Linen Trade, Ancient and Modern* (London, 1864; repr. London, 1967); Kaufhold,

- 'Gewerbelandschaften', pp. 124, 182; Reininghaus, *Gewerbe*, pp. 27–8; Mager, 'Proto-industrialization', p. 189.
- 53 Reininghaus, *Gewerbe*, pp. 23–6.
- 54 W. Barkhausen, *Die Tuchindustrie in Montjoie, ihr Aufstieg und Niedergang* (Aachen, 1925); H. Kisch, *Hausindustrie und Textilgewerbe am Niederrhein vor der Industriellen Revolution. Von der ursprünglichen zur kapitalistischen Akkumulation* (Göttingen, 1981), pp. 280–96.
- 55 Reininghaus, *Gewerbe*, p. 25; Kaufhold, 'Gewerbelandschaften', p. 136; on the Württemberg Black Forest industry, and its dependence almost from the beginning on raw wool imports, see Walter Troeltsch, *Die Calwer Zeughandlungskompagnie und ihre Arbeiter* (Jena, 1897), pp. 35, 38, 47, 98–102, 153–6.
- 56 On Württemberg's difficulties with respect to river transportation, see Wilhelm Söll, 'Die staatliche Wirtschaftspolitik in Württemberg im 17. und 18. Jahrhundert' (Ph.D. diss., Univ. of Tübingen, 1934), pp. 11–12, 72–4, 98.
- 57 Mager, 'Verflechtung', pp. 442, 444–6, 465.
- 58 Kisch, *Hausindustriellen Textilgewerbe*, pp. 281–2; quotation from Joachim Kermann, *Die Manufakturen im Rheinland 1750–1833* (Bonn, 1972), p. 145.
- 59 Kaufhold, 'Gewerbelandschaften', p. 195.
- 60 Before 1804, the Holy Roman Empire consisted of some 384 separate sovereign jurisdictions, excluding the c. 1,500 sovereign estates of Free Imperial Knights: see the recent survey of the structure of the Empire in John G. Gagliardo, *Germany under the Old Regime, 1600–1790* (London, 1991).
- 61 This was strongly emphasized for Europe as a whole by Mendels, 'Proto-industrialization', and Kriedte, Medick, and Schlumbohm, *Industrialization*; for a systematic criticism of the under-emphasis of theories of proto-industrialization on urban centres, see M. Cerman, 'Proto-industrialization in an Urban Environment: Vienna, 1750–1857', *Continuity and Change*, 8/2 (1993), pp. 281–320, esp. pp. 281–7. While Kaufhold, 'Gewerbelandschaften', confirms the growing importance of rural industries in Germany between 1650 and 1800 (p. 185), he also warns against too narrow an emphasis on the rural at the expense of the urban location of industry (p. 187).
- 62 For a useful introductory account of the agrarian systems of different early modern European societies, see De Vries, *Economy*, pp. 47–82, on Germany esp. pp. 55–7 and 59–63.
- 63 Mendels, 'Theory and Reality', p. 80; Kriedte, Medick, and Schlumbohm, *Industrialization*, pp. 8, 16–17, 40; Kaufhold, 'Gewerbelandschaften', pp. 188–9.
- 64 See G. Aubin and A. Kunze, *Leinenerzeugung und Leinenabsatz im östlichen Mitteldeutschland zur Zeit der Zunftkäufe. Ein Beitrag zu industriellen Kolonisation des deutschen Ostens* (Stuttgart, 1940); H. Aubin, 'Die Anfänge der grossen schlesischen Leinenweberei und -handlung', *VSWG* 35 (1942), pp. 103–78; H. Kisch, 'The Textile Industries of Silesia and the Rhineland: A Comparative Study of Industrialization,' in Kriedte, Medick, and Schlumbohm, *Industrialization*, pp. 178–200. For recent surveys of 'feudal proto-industries' in central and eastern Europe, see Milan Myška, 'Proto-industrialization in Bohemia, Moravia and Silesia', in Ogilvie and Cerman, *European Proto-industrialization*, pp. 188–207; and S. C. Ogilvie, 'Social Institutions and Proto-industrialization', in Ogilvie and Cerman, *European Proto-industrialization*, pp. 23–37, here pp. 28–30.

- 65 For this view in general, see Kriedte, Medick, and Schlumbohm, *Industrialization*, pp. 18ff., 29; on Silesia in particular, see U. Lewald, 'Die Entwicklung der ländlichen Textilindustrie im Rheinland und in Schlesien', *Zeitschrift für Ostforschung*, 10 (1961), pp. 601–31, here esp. 606–9.
- 66 For details of the various ways in which 'feudal proto-industries' depended on the strength, not the weakness, of landlord powers, see Kisch, 'Silesia and the Rhineland', pp. 179, 180–3, 185, 198 (explicitly taking issue with the arguments of Lewald); Myška, 'Proto-industrialization'.
- 67 Kisch, 'Silesia and the Rhineland', pp. 182–7; Tipton, *Regional Variations*, pp. 18–20; Wolff, 'Guildmaster', pp. 20–3.
- 68 Kisch, 'Silesia and the Rhineland', p. 187.
- 69 On Krefeld, see Peter Kriedte, 'Proto-Industrialisierung und großes Kapital. Das Seidengewerbe in Krefeld und seinem Umland bis zum Ende des Ancien Regime', *Archiv für Sozialgeschichte*, 23 (1983), 219–66, here pp. 257–8; on two villages in Leicestershire in England, see David Levine, *Family Formation in an Age of Nascent Capitalism* (New York/London, 1977); on Switzerland, see A. Tanner, 'Arbeit, Haushalt und Familie in Appenzell-Außerrhoden. Veränderungen in einem ländlichen Industriegebiet im 18. und 19. Jahrhundert', in J. Ehmer and M. Mitterauer, eds, *Familienstruktur und Arbeitsorganisation in ländlichen Gesellschaften* (Vienna, 1986), 449–94.
- 70 Mager, 'Verflechtung', pp. 443, 447–9; W. Mager, 'Spenge vom frühen 18. Jahrhundert bis zur Mitte des 19. Jahrhunderts', in W. Mager, ed., *Geschichte der Stadt Spenge* (Spenge, 1984), pp. 162–3. The same contrasts are drawn by Schlumbohm in his comparison of Ravensberg and neighbouring Osnabrück: see J. Schlumbohm, 'Agrarische Besitzklassen und gewerbliche Produktionsverhältnisse: Großbauern, Kleinbesitzer und Landlose als Leinenproduzenten im Umland von Osnabrück und Bielefeld während des frühen 19. Jahrhunderts', in *Mentalitäten und Lebensverhältnisse. Rudolf Vierhaus zum 60. Geburtstag* (Göttingen, 1982), 315–34, here p. 334; J. Schlumbohm, 'Seasonal Fluctuations and Social Division of Labour: Rural Linen Production in the Osnabrück and Bielefeld Regions and the Urban Woollen Industry in the Niederlausitz, ca. 1700 – ca. 1850', in M. Berg, P. Hudson, and M. Sonenscher, eds, *Manufacture in Town and Country before the Factory* (Cambridge, 1983), pp. 92–123, here p. 121; J. Schlumbohm, 'From Peasant Society to Class Society: Some Aspects of Family and Class in a Northwest German Proto-industrial Parish, 17th–19th Centuries', *Journal of Family History*, 17 (1992), pp. 183–99, here pp. 187, 197. A definitive work on the whole process of the breakdown of the *Acker-Marken-Wirtschaft* is Stefan Brakensiek, *Agrarreform und ländliche Gesellschaft. Die Privatisierung der Marken in Nordwestdeutschland, 1750–1850* (Paderborn, 1991), summarized in Stefan Brakensiek, 'Agrarian Individualism in North-Western Germany, 1770–1870', *German History*, 12 (1994), pp. 137–79, esp. pp. 157–61 on the interpenetration between landlord powers and the *Markverfassung* in parts of Westphalia (particularly ecclesiastical territories such as Osnabrück).
- 71 Mendels, 'Theory and Reality', p. 80; Kriedte, Medick, and Schlumbohm, *Industrialization*, pp. 8, 16–17, 40.
- 72 On England, see Levine, *Family Formation*; on the Swiss canton of Zürich, see R. Braun, 'Early Industrialization and Demographic Change in the Canton of Zürich', in C. Tilly, ed., *Historical Studies of Changing Fertility* (Princeton, 1978), pp. 289–334, pp. 299, 307, although see also the evidence that industry arose in some villages in the canton of Zürich in which strong community institutions survived, presented in U. Pfister, 'Proto-industrialization and Demographic Change. The Canton of Zürich Revisited',

- JEEH 18 (1989), 629–62, here p. 635 with n. 14, and esp. pp. 653–9.
- 73 See the discussion in Ogilvie, 'Proto-industrialization in Europe', pp. 166–7; Ogilvie, 'Social Institutions', 27–8, 30.
- 74 See the discussion of the relationship between state and local community in Mack Walker, *German Home Towns: Community, State, and General Estate 1648–1871* (Ithaca, NY, 1971), and the discussion of the mechanisms by which the German symbiosis between community and state arose in the early modern period in Ogilvie, 'Crisis', 432f.
- 75 E. Gröllich, *Die Baumwollweberei der sächsischen Oberlausitz und ihre Entwicklung zum Grossbetrieb* (Leipzig, 1911); A. Kunze 'Der Weg zur kapitalistischen Produktionsweise in der Oberlausitzer Leinweberei im ausgehenden 17. und zu Beginn des 18. Jahrhunderts', in E. Winter, ed., *E. W. von Tschirnhaus und die Frühaufklärung in Mittel- und Osteuropa* (Berlin, 1960).
- 76 H. Kisch, 'From Monopoly to Laissez-faire: The Early Growth of the Wupper Valley Textile Trades', *JEEH* 1 (1972), pp. 298–407, pp. 299–304; Kisch, *Hausindustriellen Textilgewerbe*, pp. 94–6; Kriedte, 'Großes Kapital', p. 225.
- 77 Mager, 'Spence', pp. 162–3; Mager, 'Verflechtung', pp. 443, 447–9.
- 78 Mager, 'Verflechtung', pp. 441; W. Mager, 'Die Rolle des Staates bei der gewerblichen Entwicklung Ravensbergs in vorindustrieller Zeit', in K. Düwell and W. Köllmann, eds., *Rheinland-Westfalen im Industriezeitalter, i: Von der Entstehung der Provinzen bis zur Reichsgründung* (Wuppertal, 1983), pp. 61–72, p. 71; J. Schlumbohm, 'Agrarische Besitzklassen und gewerbliche Produktionsverhältnisse: Großbauern, Kleinbesitzer und Landlose als Leinenproduzenten im Umland von Osnabrück und Bielefeld während des frühen 19. Jahrhunderts', in *Mentalitäten und Lebensverhältnisse* (Göttingen, 1982), pp. 315–34, pp. 330–34; Schlumbohm, 'Peasant society', pp. 187, 197.
- 79 Walker, *German Home Towns*; for a detailed examination of what this meant on the local level in an industrial region of the duchy of Württemberg, see S. C. Ogilvie, 'Coming of Age in a Corporate Society: Capitalism, Pietism and Family Authority in Rural Württemberg 1590–1740', *Continuity and Change*, 1 (1986), 279–331, and S. C. Ogilvie, 'Institutions and Economic Development in Early Modern Central Europe', *Transactions of the Royal Historical Society*, 6th ser., 5 (1995), pp. 221–50; on the survival of strong communities into the nineteenth century in many parts of the German south, and their impact on factory industrialization, see Tipton, *Regional Variations*.
- 80 On the Black Forest worsted industry, see Troeltsch, *Calwer Zeughandlungskompagnie*; and Ogilvie, 'Institutions and Economic Development'; for a comparison of the Black Forest worsted industry and the linen industry in the district of Heidenheim, see R. Flik, *Die Textilindustrie in Calw und in Heidenheim 1705–1870. Eine regional vergleichende Untersuchung zur Geschichte der Frühindustrialisierung und Industriepolitik in Württemberg* (Stuttgart, 1990); for a detailed examination of certain aspects of the linen industry in the district of Urach, see Hans Medick, "Freihandel für die Zunft": Ein Kapitel aus der Geschichte der Preiskämpfe im württembergischen Leinengewerbe des 18. Jahrhunderts', in *Mentalitäten und Lebensverhältnisse*, pp. 277–94; and Hans Medick, 'Privilegiertes Handelskapital und "kleine Industrie". Produktion und Produktionsverhältnisse im Leinengewerbe des alt-württembergischen Oberamts Urach im 18. Jahrhundert', *Archiv für Sozialgeschichte*, 23 (1983), pp. 267–310.

- 81 This aspect of the theory of proto-industrialization is criticized by Carlo Poni, 'Proto-industrialization, Rural and Urban', *Review*, 9 (1985), pp. 305–14, and by Cerman, 'Proto-industrialization', pp. 281–7.
- 82 Mendels, *Industrialization*, pp. 16, 26; Kriedte, Medick, Schlumbohm, *Industrialization*, pp. 7, 13, 22, 106, 115, 128.
- 83 Poni, 'Proto-industrialization'; Cerman, 'Proto-industrialization', pp. 281–7; Ogilvie, 'Proto-industrialization in Europe', pp. 169–71.
- 84 Kisch, *Hausindustriellen Textilgewerbe*, pp. 100–3, 116, 130–1, 140; Kriedte, 'Großes Kapital', pp. 221, 225, 241, 246, 249, 258; Peter Kriedte, 'Demographic and Economic Rhythms: The Rise of the Silk Industry in Krefeld', *JEEH* 15 (1986), pp. 259–89, here pp. 260–1.
- 85 See Kisch, *Die Hausindustriellen Textilgewerbe*, pp. 280–92; Barkhausen, *Tuchindustrie in Montjoie*.
- 86 Kaufhold, 'Gewerbelschaften', p. 152; Kisch, *Hausindustriellen Textilgewerbe*, pp. 273–316; Joachim Kermann, *Die Manufakturen im Rheinland 1750–1833* (Bonn, 1972), pp. 118–30, 132ff.
- 87 Kisch, 'Monopoly', pp. 307, 351–3, 400, 403–7.
- 88 Kaufhold, 'Gewerbelschaften', p. 160; Alphons Thun, *Die Industrie am Niederrhein und ihre Arbeiter*, ii: *Die Industrie des bergischen Landes (Solingen, Remscheid und Elberfeld-Barmen)* (Leipzig, 1879), pp. 109–22.
- 89 See e.g. the arguments put forward in Charles R. Hickson and Earl A. Thomson, 'A New Theory of Guilds and European Economic Development', *Explorations in Economic History*, 28 (1991), pp. 127–68.
- 90 W. Engels and P. Legers, *Aus der Geschichte der Remscheider und bergischen Werkzeug- und Eisenindustrie* (Remscheid, 1928), i. pp. 131–9.
- 91 Kaufhold, 'Gewerbelschaften', p. 160; Thun, *Industrie am Niederrhein*, ii. pp. 16–19, 32ff., 57–9.
- 92 Kisch, 'Monopoly', pp. 394–401.
- 93 Aubin and Kunze, *Leinenerzeugung*; Aubin, 'Anfänge'; Kisch, 'Silesia and the Rhineland'; Kaufhold, 'Gewerbelschaften', p. 125. In some areas, the beginnings of rural linen production are already observable in the early 16th century: see e.g. Gerhard Heitz, *Ländliche Leinenproduktion in Sachsen (1470–1555)* (Berlin, 1961).
- 94 B. Schöne, 'Kultur und Lebensweise Lausitzer und erzgebirgischer Textilproduzenten sowie von Keramikproduzenten im Manufakturkapitalismus und in der Periode der Industriellen Revolution', in H. Zwahr, ed., *Die Konstituierung der deutschen Arbeiterklasse von den dreißiger bis zu den siebziger Jahren des 19. Jahrhunderts* (Berlin, 1981), pp. 446–67; B. Schöne, 'Posamentierer – Strumpfwirker – Spitzenklöpplerinnen. Zu Kultur und Lebensweise von Textilproduzenten im Erzgebirge und im Vogtland während der Periode des Übergangs vom Feudalismus zum Kapitalismus (1750–1850)', in R. Weinhold, ed., *Volksleben zwischen Zunft und Fabrik. Studien zu Kultur und Lebensweise werktätiger Klassen und Schichten während des Übergangs vom Feudalismus zum Kapitalismus* (Berlin/GDR, 1982), pp. 107–64; Wolff, 'Guildmaster', pp. 33–5; Kaufhold, 'Gewerbelschaften', p. 128.
- 95 B. Schöne, 'Lausitzer Bandweberei vom Zunft Handwerk zur Manufaktur und zur frühen Fabrik', in *Internationales Handwerks geschichtliches Symposium Veszprém 20–24.11.1978* (Veszprém, 1979), pp. 176–81, pp. 178–9.
- 96 Kaufhold, 'Gewerbelschaften', p. 129; Albin König, *Die Sächsische Baumwollindustrie am Ende des vorigen Jahrhunderts und während der Kontinentalsperre* (Leipzig, 1899), pp. 148ff.; Tipton, *Regional Variations*, p. 32.

- 97 Wolff, 'Guildmaster', pp. 33–5, 38.  
 98 *Ibid.*, p. 35.  
 99 Tipton, *Regional Variations*, p. 32.  
 100 Hans Lohse, *Schmalkalder Bergbau, Hüttenwesen und Eisenhandwerk* (Schmalkalden, 1955), pp. 45–67.  
 101 P. Rotschky, 'Die Waffenindustrie in Suhl, ihre Entwicklung und Lage' (Jur. D. diss., Univ. of Jena, 1933), pp. 26–33.  
 102 Emanuel Sax, *Die Hausindustrie in Thüringen*, ii: *Ruhla und das Eisenacher Oberland* (Jena, 1884), pp. 5–37.  
 103 Emanuel Sax, *Die Hausindustrie in Thüringen*, i: *Das Meininger Oberland* (2nd edn, Jena, 1885), pp. 11ff., 138–50.  
 104 Walter Schneider, *Die Apoldaer Wirkwarenindustrie bis zum Jahre 1914* (Jena, 1922) and Hans Eberhardt, *Goethes Umwelt. Forschungen zur gesellschaftlichen Struktur Thüringens* (Weimar, 1951), pp. 67–85.  
 105 Johann Peter Baum, 'Die wirtschaftlicher Entwicklung des Obereichfeldes in der Neuzeit, mit besonderer Berücksichtigung der Hausindustrie' (Ph.D. diss., Univ. of Berlin, 1903).  
 106 Hans Patze and Walter Schlesinger, eds, *Geschichte Thüringens* (5 vols, Cologne, 1982), here vol. v, pt 1, p. 421.  
 107 Sax, *Hausindustrie in Thüringen*, i: *Das Meininger Oberland*, pp. 11ff.  
 108 Schneider, *Apoldaer Wirkwarenindustrie*; Eberhardt, *Goethes Umwelt*, pp. 67–85.  
 109 Baum, 'Die wirtschaftliche Entwicklung'.  
 110 Mager, 'Verflechtung', p. 444.  
 111 See the detailed examination of the company of the Bielefeld linen merchants in A. Flügel, *Kaufleute und Manufakturen in Bielefeld: Sozialer Wandel und wirtschaftliche Entwicklung im proto-industriellen Leinengewerbe von 1680 bis 1850* (Bielefeld, 1993).  
 112 On the *Legge* in the county of Ravensberg, see Mager, 'Verflechtung', pp. 452ff.; on Ravensberg and the prince-bishopric of Osnabrück, see Schlumbohm, 'Seasonal fluctuations'; on the county of Tecklenburg, see Stephanie Reekers, 'Beiträge zur statistischen Darstellung der gewerblichen Wirtschaft Westfalens um 1800, T. 3 Tecklenburg-Lingen', *Westfälische Forschungen*, 19 (1966), pp. 34ff.  
 113 Mager, 'Rolle des Staates', p. 67; Schlumbohm, 'Seasonal fluctuations', p. 94.  
 114 Schlumbohm, 'Agrarische Besitzklassen', p. 330.  
 115 J. Mooser, 'Der Weg vom proto-industriellen zum fabrik-industriellen Gewerbe in Ravensberg, 1830–1914', in K. Düwell and W. Köllmann, eds, *Rheinland-Westfalen im Industriezeitalter*, i: *Von der Entstehung der Provinzen bis zur Reichsgründung* (Wuppertal, 1983), pp. 73–95, pp. 75–82; Schlumbohm, 'Agrarische Besitzklassen', p. 330; Wolff, 'Guildmaster', pp. 30–3.  
 116 On the worsted weavers' guilds, see Ogilvie, 'Coming of Age'; Ogilvie, 'Institutions'; on the Calw merchant company, see Troeltsch, *Calwer Zeughandlungskompagnie*.  
 117 On the guilds of the linen weavers, see Medick, "'Freihandel'"; on the Heidenheim merchant company, see Flik, *Textilindustrie*; on the Urach company, see Medick, 'Privilegiertes Handelskapital'.  
 118 *Ibid.*, p. 301; Flik, *Textilindustrie*, pp. 92–3.  
 119 Ogilvie, 'Institutions'; Flik, *Textilindustrie*.  
 120 Medick, 'Privilegiertes Handelskapital', pp. 306–10.  
 121 Flik, *Textilindustrie*, pp. 117ff., 142–3.  
 122 For detailed examples of how guilds continued to constrain growth in many

- parts of 19th-century Germany during industrialization, see Tipton, *Regional Variations*, pp. 26–7, 30, 52–3, 59, 71, 72–76.  
 123 At best, the state is allocated a part share in a nine-page 'excursus' on 'The political and institutional framework of proto-industrialization' in Kriedte, Medick, and Schlumbohm, *Industrialization*, pp. 126–34.  
 124 See the summary in Reininghaus, *Gewerbe*, p. 18: 'With many, if not all, foundations of manufactories by the state, the yield must be estimated as being small. Few of these manufactories worked economically in the longer term.'  
 125 See e.g. Herbert Kisch, 'Prussian Mercantilism and the Rise of the Krefeld Silk Industry: Variations upon an Eighteenth-Century Theme', *Transactions of the American Philosophical Society*, NS 58 (1968), part 7, 1–50, pp. 1–15.  
 126 Kaufhold, 'Gewerblandschaften', pp. 122–4.  
 127 Quoted in Kisch, 'Prussian Mercantilism', p. 15, n. 1.  
 128 Eberhard Gothein, *Wirtschaftsgeschichte des Schwarzwaldes und der angrenzenden Landschaften*, i: *Städte- und Gewerbegeschichte* (Strasbourg, 1892), quotation from p. 449; Wolfram Fischer, *Der Staat und die Anfänge der Industrialisierung in Baden 1800 bis 1850*, i: *Staatliche Gewerbepolitik* (Berlin, 1962).  
 129 Herbert Kühnert, *Unkundenbuch zu thüringischen Glashüttengeschichte und Aufsätze zu thüringischen Glashüttengeschichte* (Wiesbaden, 1973), pp. 21–7; Hans Patze and Walter Schlesinger, eds, *Geschichte Thüringens* (5 vols, Cologne/Vienna, 1982), i, section 1, pp. 198–231, 422, 478, 509–10, 516, 534.  
 130 Kaufhold, 'Gewerblandschaften', pp. 197–8.  
 131 *Ibid.*, p. 137; Wolff, 'Guildmaster', pp. 15–26, 33–36; Alfred Zimmermann, *Blüthe und Verfall des Leinengewerbes in Schlesien* (Breslau, 1885), p. 76.  
 132 Kaufhold, 'Gewerblandschaften', pp. 150–1; Clemens Brückner, *Zur Wirtschaftsgeschichte des Regierungsbezirks Aachen* (Cologne, 1976), p. 322.  
 133 On this, see e.g. the literature surveyed in Ogilvie, 'Crisis', 434–5.  
 134 Kisch, 'Silesia and the Rhineland', 184–5.  
 135 Mooser, *Bäuerliche Gesellschaft*, p. 166; Mager, 'Verflechtung', p. 441; Mager, 'Rolle des Staates', p. 71; Schlumbohm, 'Agrarische Besitzklassen', pp. 330–4; Schlumbohm, 'Peasant Society', pp. 187, 197.  
 136 W. Grube, *Vogteien, Ämter, Landkreise in der Geschichte Südwestdeutschlands* (2nd edn., Stuttgart, 1960), esp. pp. 18–41; J. A. Vann, *The Making of a State: Württemberg, 1593–1793* (Ithaca, NY, 1984), pp. 51, 295, and *passim*; D. W. Sabeian, *Property, Production and Family in Neckarhausen, 1700–1870* (Cambridge, 1990), esp. pp. 66–87.  
 137 See Ogilvie, 'Crisis', where the process by which this symbiotic relationship between corporate groups and the German state developed is explored in greater detail; an illustration of how this was seen from the perspective of the state bureaucracy is provided by the persistently corporatist (and extremely influential) recommendations of the mercantilist Johann Joachim Becher, chronicled in H. Hassinger, *Johann Joachim Becher 1635–1682: Ein Beitrag zur Geschichte des Mercantilismus* (Vienna, 1951).  
 138 Troeltsch, *Calwer Zeughandlungskompagnie*, p. 327; Medick, 'Privilegiertes Handelskapital', pp. 306–8; Flik, *Textilindustrie*, pp. 99–101, 105–7; Ogilvie, 'Institutions'.  
 139 Kisch, 'Monopoly', pp. 307–8, 316, 323, 345, 355, 372, 386.  
 140 Wolff, 'Guildmaster', pp. 39–41; Tipton, *Regional Variations*, pp. 30ff.

- 141 For a recent survey of the role of demand in European industrial growth, see Jan de Vries, 'Between Purchasing Power and the World of Goods: Understanding the Household Economy in Early Modern Europe', in John Brewer and Roy Porter, eds, *Consumption and the World of Goods* (London/New York, 1993), pp. 85–132, esp. 85–9. See also the brief but enlightening discussion of the possible role of state demand in stimulating and/or inducing crises in particular economic sectors, in N. Steensgaard, 'The Seventeenth-Century Crisis', in N. G. Parker and L. M. Smith, eds, *The General Crisis of the Seventeenth Century* (London, 1978), pp. 36–42. For the view that high military spending stimulated industry in early modern Europe, see Werner Sombart, *Luxus und Kapitalismus* (Munich, 1913); F. Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II* (2 vols, London, 1972), i. pp. 409–10.
- 142 Werner Sombart, *Krieg und Kapitalismus* (Munich/Leipzig, 1913); see also Gerhard Oestreich, *Friedrich Wilhelm I. Preußischer Absolutismus, Merkantilismus, Militarismus* (Göttingen etc., 1977), pp. 63f., 85f. For a discussion of Sombart's views on war as a demand-side stimulus to industry, see J. M. Winter, 'The Economic and Social History of War', in J. M. Winter, ed., *War and Economic Development: Essays in Memory of David Joslin* (Cambridge, 1975), pp. 1–10.
- 143 On the general growth in consumer demand in early modern Europe, see e.g. de Vries, 'Purchasing Power', and the other essays in Brewer and Porter, eds, *Consumption*. Studies of the growth of consumption in German-speaking Europe are still not numerous, although there are important exceptions: see e.g. Roman Sandgruber, *Die Anfänge der Konsumgesellschaft: Konsumgüterverbrauch, Lebensstandard und Alltagskultur in Österreich im 18. und 19. Jahrhundert* (Vienna, 1982); and Ruth Mohrmann, *Alltagswelt im Land Braunschweig: Stadt und ländliche Wohnkultur vom 16. bis zum frühen 20. Jahrhundert* (Münster, 1990). A growth in market-orientated consumption and production in a Württemberg village from about 1750 onward is described by Sabeen, *Property*.
- 144 In the most important recent contribution to this debate, Jan de Vries argues that demand for market goods led households in many parts of Europe from the mid-seventeenth century onward to re-allocate time from leisure and 'consumption-preparing' activities to 'income-earning' work; thus consumer demand drew previously 'idle' household labour into market production: see de Vries, 'Purchasing Power', esp. 107–21, and Jan de Vries, 'The Industrial Revolution and the Industrious Revolution,' *Journal of Economic History*, 54 (1994), 249–71. However, while de Vries brilliantly illuminates a possible mechanism by which demand could have drawn idle resources into productive use, he leaves unresolved the question of what caused the initial growth of consumer demand, merely mentioning that it may have derived either from changing tastes or from changing relative prices – e.g. from greater availability of cheap, attractive market wares (*Ibid.*, p. 257).
- 145 Lee, 'Economic Development'; F. B. Tipton, 'Government Policy and Economic Development in Germany and Japan: A Skeptical Reevaluation', *Journal of Economic History*, 41 (1981), pp. 139–50; W. Fischer, 'Government Activity and Industrialization in Germany 1815–70', in W. W. Rostow, ed., *The Economics of Take-off into Sustained Growth* (London, 1963).
- 146 The widening regional disparities within Germany during 19th-century industrialization are emphasized by Tipton, *Regional Variations*.