

CHAPTER 3. THE REORGANIZATION OF PRODUCTION

Expansion of the market induces changes in production that increase productivity; this opens the way for further market expansion. In preindustrial Europe, the greatest cause of increasing productivity was changes in the organization of production. And such changes remain an important factor in increasing productivity today.¹

In this chapter, we will examine in detail how expansion of the market in preindustrial Eurothpe induced a reorganization of production. We will look first at agriculture and then at industry. We will conclude with some general observations on the organization of production and on how it changes in response to market expansion.

THE REORGANIZATON OF AGRICULTURE

The reorganization of agriculture was particularly important in increasing overall productivity and income, because the preindustrial economy was overwhelmingly agricultural. Agriculture—including fisheries and forestry—employed most of the labor force and produced most of the output.² It produced not only food but also most industrial raw materials—particularly those used by the textile industry.³ It was also the principal source of energy—motive power for inland transportation in the form of draft animals and the fodder to fuel them, as well as firewood and charcoal for industry and for heating.⁴

We saw in Chapter 1 that in the centuries following the severe fiscal and monetary crisis of the third century, the economy of the Roman empire slowly collapsed. The process of market expansion ran in reverse: commerce largely disappeared, and long-distance trade dwindled almost to nothing.

¹We noted in the introduction that, quite recently, globalization—a change in the geographic organization of production—has been a major source of increasing productivity in the world economy.

²(Braudel 1972) estimates total output of the Mediterranean basin in the sixteenth century at 1.1-1.4 billion ducats, with agriculture accounting for 80-86% of this. (Allen 2000) finds the share of the labor force in agriculture (excluding fisheries and forestry) in 1600 to range from 49% in the Netherlands to slightly under 70% in England and France.

³(Slicher van Bath 1977); (Masschaele 1997) Ch. 2

⁴(Fisher 1961)

By the sixth century, the economy of Europe had been reduced to little more than subsistence. People lived in self-sufficient villages. Within each, households produced for themselves most of what they required: they grew their own food, built their own houses, and made their own clothes, tools, and utensils. There was some exchange among the villagers, but the market was too small to support much specialization.

In much of Europe, superimposed on this structure was a class of rulers or ‘lords’ who lived by predation on the subsistence villagers—exactng from them tribute in the form of goods and services. Tribute was in kind—typically a quantity of grain, some cloth or other manufactures, and a number of days of uncompensated work.

In the late seventh century, as we saw in Chapter 2, commerce began to re-emerge, and there was a gradual expansion of the market. The contact with a larger market presented agricultural producers with new opportunities. They responded by gradually reorienting away from production for subsistence and tribute and towards production for sale. It was this gradual commercialization of agriculture that induced reorganization.

It is useful to divide the process into three phases. The first—the initial response—saw the emergence of demesne agriculture and the open field system. The second phase saw the reorganization of agriculture into family farms. The third saw completion of the process with full commercialization.

The initial response of subsistence-tribute agriculture

The basic unit of production of subsistence agriculture was the household—a married couple together with their children and, perhaps one or two elderly relatives or slaves. The members of the household worked the land to supply their own needs. The households of a village acted together, largely informally, for purposes of defense and internal order. They also insured one another against individual misfortune through mutual aid. The village, however, played no role in coordinating production.

Tribute did not alter this picture very much. The local lord took part of the output of each peasant household in the area he ruled—his manor. Village leaders took on the additional function of mediating between the manorial lord and the villagers.⁵ But otherwise little changed.

⁵(Wickham 2005), (Reynolds 1997)

The productivity of subsistence-tribute agriculture was generally low. Its goal was to ensure survival, not to produce as much as possible.⁶ As a result, producers preferred to diversify rather than to specialize in individual crops. They also favored varieties and techniques that were the most reliable over those that promised higher but more uncertain yields. Moreover, the need for self-sufficiency meant that many activities had to be undertaken at an inefficiently small scale and despite the unsuitability of local conditions.⁷ And there was little incentive for effort beyond that needed for subsistence: additional output was likely to be taken in increased tribute or lost to sharing with less fortunate neighbors. And if some surplus did remain, there was no way of selling it.

It was the initial adaptation of this subsistence-tribute agriculture to an expanding market that created the characteristic structures of the Middle Ages—demesne agriculture and the open field system. Historians have long understood these institutions as adaptations to non-market self-sufficiency. However, recent research suggests the opposite—that both arose in response to new market opportunities.

Demesne agriculture

Large-scale demesne agriculture first appeared in mid-eighth century in the Frankish heartland and then spread outwards with the Carolingian conquests of the ninth and tenth centuries.⁸ The demesne as such was not new. Lords had always had a small area of land directly under their control, often cultivated by household slaves. The new demesne, however, was much larger: it typically took up a quarter to a third of the total cultivated area of the manor. And the new demesne produced for sale rather than for the direct consumption of the lord's household. The earliest of the new demesnes produced mainly wine, but later many produced grain to supply the growing cities and the Carolingian armies. The new type of demesne was created by taking land away from peasants and by requiring them to supply the labor needed to work it. It was, therefore, an expression of the growing power of manorial lords.

⁶(Scott 1976)

⁷(Dyer 1995)

⁸(Verhulst 2002), (Wickham 2005)

The initial adaptation to an expanding market took this particular form because demesne agriculture offered two important advantages—a faster response and better access to the market. Production for the market required the adoption of different crops and techniques and often involved considerable investment—in planting vineyards, for example, or in clearing land. As we have seen, subsistence agriculture was extremely conservative. Peasants were reluctant, for good reason, to abandon traditional crops and techniques. And they lacked the resources needed for investment or to tide them over a period of costly experimentation. So manorial lords, rather than waiting for their tenants to respond and then collecting a larger tribute, took the initiative directly themselves.⁹

Demesne agriculture also had an advantage in marketing the output. Commerce did not at first penetrate very deeply into the country. There were initially no local markets that could have collected together the output of many small producers for long-distance trade. The demesne had the advantage of size. It could produce in large enough quantities to make it worthwhile for a merchant to travel to the manor to make a purchase or for the lord of the manor to send out his own agent to sell his output. Moreover, merchants, to assure their supply, often contracted to take the crop for several years in advance—an arrangement that would have been impracticable with a multitude of small producers.¹⁰

The open field system

The open field system appeared somewhat later than the demesne, possibly in the eleventh century. By then many local markets had sprung up, giving peasants as well as manorial lords the possibility of producing for the market and the incentive to do so.¹¹ Under the open field system, the cultivable land of the village was divided into two or three large fields, which rotated between different crops and fallow. Within a field, each household cultivated one or more strips; the lord's demesne also took a part of the field. Livestock grazed on the fallow fields and on the cultivated fields after harvest—increasing livestock production without reducing the area available for field crops.

⁹(Fenoaltea 1975) Lords sometimes tried to speed peasant response by requiring their tenants to plant specific crops for the market or to pay their tribute in kind in the form of specific crops.

¹⁰See (Power 1942) on the evolution of the marketing of wool in England.

¹¹The first evidence of the open-field system dates from the twelfth century (Reynolds 1997).

The open field system was a particular adaptation of subsistence agriculture that facilitated production for the market of both field crops and livestock.¹² Self-sufficient subsistence agriculture was naturally mixed: animals were needed primarily for their manure, but they also provided meat and wool. They were typically fed on pastureland during the day and brought in and penned on the cultivated land at night so their manure could be collected. The open field system eliminated the need for separate pasture, so that more land could now be cultivated to raise crops. It also eliminated the cost of fencing to keep animals from straying from one small fallow plot onto a neighboring one where crops were growing. Essentially, the efficient scale of production for livestock was much larger than that for field crops, and this system allowed both to operate at the appropriate scale.¹³

The open field system required a great deal of coordination and policing. For example, joint decisions had to be made on times of planting and harvesting, and on the hiring and compensation of herdsman. The necessary coordination was performed by village councils and village or manorial courts.¹⁴

The connection with feudalism

Both demesne agriculture and the open field system were organizational innovations, and both were adaptations of existing forms of organization. The demesne expanded the lord's home garden and the tribute in labor that already existed for other purposes. The open field system enlisted the existing village governance structure to perform a new function of coordination and policing.

Both forms of organization appeared principally in regions where local lords were powerful—regions of 'feudalism'. The demesne was possible only where lords had the power to impose it. The open field system was possible only in regions with strong

¹²(Dahlman 1980)

¹³We will see that with exposure to the market, regions tended to specialize. Some specialized in producing field crops, others in raising livestock. But in some intermediate regions a combination offered agricultural producers the best return. It was in these regions that the open field system developed.

¹⁴(Dahlman 1980), (Reynolds 1997)

village governance; this tended to emerge where lords were powerful and where villagers needed a strong structure of governance to represent their interests.¹⁵

Despite the link with feudalism, however, both forms of organization were actually signs of progressive commercialization rather than of economic backwardness. Neither existed, nor would have made much sense, in an environment of pure subsistence and tribute.

The limitations of these forms of organization

Even with these adaptations, however, the productivity of subsistence-tribute agriculture remained relatively low. The demesne was a kind of command economy, managed by a steward who directed the labor of dozens, or even hundreds, of forced laborers. These laborers had little incentive to exercise much care or effort, and the steward's supervision could not make up for their lack of motivation. In the open field system each household worked for itself, which provided stronger motivation. However, the cooperative structure made it difficult to adapt to changing market circumstances: major decisions, such as the choice of crop, were communal.

Under both forms of organization, land and labor were largely locked in place. Consequently, resources might be earning a poor return in one place when they could have been employed more fruitfully in another. For example, one demesne might have more workers than it could usefully employ, while another had more land than it could cultivate with the workers it had. One study has estimated that agricultural output in Domesday England could have been increased by 40% if manorial estates had simply been able to trade land and labor with one another.¹⁶

As the market continued to expand and to develop, it created strong incentives for a more efficient use of resources and for greater flexibility. Under this pressure, both the demesne and the open field system were gradually replaced by a more productive form of organization—one that consisted of independent family farms producing for the market and served by markets for land, labor and finance.

¹⁵(Hopcroft 1999), (Reynolds 1997)

¹⁶(McDonald 1998)

Reorganization into independent family farms

The most productive form of organization in agriculture has always been the independent family farm.¹⁷ A ‘family farm’ is an agricultural enterprise operated and owned by a farmer: that is, the farmer himself controls the enterprise and his income depends on its success.¹⁸ Such a self-employed owner-operator has the strongest incentives for care and effort.

In industry, the incentive advantages of an owner-operator may have to be weighed against the advantages of operating on a larger scale: large-scale production often requires a different form of organization. Although the different form of organization may be inferior in terms of incentives, this is more than compensated for by the advantages of large-scale production. In agriculture, however, there is no such trade-off, because advantages of scale are rare—some in livestock, but hardly any in field crops or horticulture.¹⁹

Family farm vs. farmer’s household vs. the land

It is important to distinguish the family farm from the household of the farmer. As agriculture was reorganized, the two overlapped to a considerable degree, but they were nonetheless distinct. Members of the farmer’s household often worked on the family farm, but they also worked outside it. As a market for labor developed, they could hire out their labor to other enterprises—agricultural and non-agricultural. Indeed, as we will see, the household might itself engage in additional, non-agricultural activities such as manufacturing, mining, transportation, or construction. Moreover, just as household labor might be employed outside the family farm, so might the family farm employ labor from outside the household. It could and did hire help both year-round and seasonally.

¹⁷(Allen and Lueck 1998) reports that in 1992, over 85% of US farms were ‘family farms’; farm corporations accounted for only 6% of output. (Hayami and Otsuka 1993) finds that in developing countries the family farm is the predominant form of agricultural organization wherever it is allowed: large farms employing wage labor are commonly found only where tenancy is blocked in some way.

¹⁸This definition of ownership is due to (Hansmann 1996).

¹⁹Researchers find that larger farms were in general no more productive than smaller farms ((Bates 1988); (Allen 1999); (Overton 1996)). The same seems to hold even today: (Kislev and Peterson 1982).

It is important, too, to distinguish the family farm from the land it worked. The farmer owned the farm enterprise—but not necessarily the farm land. He might, of course, work land owned by the household. But, as a market for land developed, he might equally well work land owned by others. Conversely, land owned by the farmer's household might be worked by others rather than by the family farm itself.

The creation of the family farm as an enterprise distinct from the household and distinct from the household's land required that labor and land be freed from the restrictions imposed on them by feudal law and custom. It also required the development of markets for labor, land, and financing.

Markets for labor and land

In the eleventh and twelfth centuries, under the pressure of the expanding market economy, feudal tribute of all kinds was increasingly commuted—that is, converted into money payments. Instead of having to provide tribute in labor and produce, peasants now had to pay their tribute in cash.²⁰ This was to the benefit of both sides.

Commutation obliged peasants to reorient their production to the market, to obtain the cash they needed. Of course, commutation only became possible when local markets emerged in which peasants could sell their produce. Commutation simultaneously freed peasants to use their labor and land in the most productive way they could.

Manorial lords, for their part, could replace forced labor on their demesnes with better-motivated hired labor. And they no longer had to sell the produce received in tribute for the cash they needed to purchase consumption goods or to meet their own feudal obligations.²¹

²⁰While commutation did not necessarily mean the end of formal serfdom, servile status increasingly became a social rather than an economic distinction. In sixteenth century England, for example, servile status did not prevent some serfs from becoming wealthy industrialists. ((Kellenbenz 1974))

²¹At the same time, these feudal obligations—especially military service—were themselves being commuted to payments of cash (scutage). We shall have more to say about this in Chapter 10.

The freeing of land from feudal, family, and community restrictions proceeded more slowly.²² Moreover, the degree to which land rights could be sold freely varied from region to region. Alienability seems to have come much earlier in England, for example, than it did in France.²³

Alienability did not necessarily require freehold ownership of the land: feudal tenants with hereditary rights to the land, subject to tribute, could sell these rights to others, who then assumed payment of the tribute (commutation made this much easier).

Markets developed not only for tenancies but also for lordships or fiefs: thirteenth-century Sicily, for example, boasted an active market in fiefs among the aristocracy and the urban elite.²⁴

Financing the land used by the family farm

While some potential farmers already owned the land they needed or were able to purchase it, many lacked the necessary resources. They could nonetheless obtain the use of the necessary land if someone else was willing to provide the necessary financing. Any such arrangement would require, of course, that the provider of the financing be protected in some way against default. The natural and usual way to do this in the case of land, is to secure the financing with the land being financed.

There are, in general, two ways of doing this—the secured loan proper and the lease. With a secured loan—today’s mortgage is an example—the borrower receives a cash loan with which to purchase the asset. The asset becomes the property of the borrower but it remains collateral for the loan: if the borrower defaults, the asset passes to the lender.

With a lease, on the other hand, it is the lender who owns or purchases the asset, and, rather than lending a sum of money, he lends the asset itself. The leased asset remains the property of the lender, and if the borrower defaults the lender merely has to regain

²²The right of a household to sell land was limited not only by feudal constraints but also, in many cases, by the rights of family, neighbors, and villages either of first refusal or of consent (Powelson 1988), (van Bavel 2008).

²³(Macfarlane 1978)

²⁴(Epstein 1991) Ch. 4

possession. Because the asset is already his property, a lease generally gives the lender better legal protection.

For reasons we will explore in Chapter 9, the secured loan was slower to develop than the lease, and it was rarely used to finance the purchase of land. So the main way for the family farm to gain use of land it did not own was through a lease.²⁵

Leasing emerged first in the more advanced regions of northern Italy and the Low Countries and somewhat later in England, France, and Germany.²⁶ The term of a typical lease was one to five years, but it was commonly rolled over repeatedly with the same tenant. The lease was either for a fixed rent or for a share of the harvest. In the latter case, the landlord's share varied, but it was most commonly a half.²⁷

The separation of ownership from use through the practice of leasing made land an attractive asset for urban investors—one that was relatively secure and trouble-free. Merchants purchased land to provide for their retirement, as dowry for their daughters, or to provide for their survivors in case of their death. The intense interest of merchants in acquiring land for these purposes stimulated the development both of the market for land and of the practice of leasing.

Restructuring land holdings

The formation of family farms, whether the farmer owned the land or leased it, required the creation of holdings of land of an appropriate size. The appropriate size, of course, depended on the circumstances. In areas where agriculture was oriented to the market and was more advanced, farmers tended to be skilled professionals, with good alternatives available to them in terms of employment. So, to be worth their while, the holdings they farmed had to be relatively large. In more backward areas, where agriculture was still geared primarily to subsistence, holdings were much smaller.²⁸

²⁵“The modern word ‘farmer’ derives from the medieval use of the Latin word *firmarius* to mean a leaseholder.” (Britnell 2004) p436

²⁶In England, the practice of leasing entire manors was common in the twelfth century, but this was more akin to tax farming (see Chapter 10) than to the type of leasing discussed here.

²⁷Strictly, the term farmer (*fermier*) was applied only to the holder of a fixed-rent lease. A sharecropper was called a *métayer*.

²⁸See (Kislev and Peterson 1982) on the size of farms.

How land was restructured to produce holdings of the appropriate size also depended on the circumstances.²⁹ In regions where feudalism was weak and peasants were able to trade their land freely, the restructuring of peasant holdings took the form of voluntary consolidation via the market. In parts of England, peasant smallholders sold out to richer neighbors or to urban investors, enabling the buyers to put together larger holdings.³⁰ In northern Italy, lords bought up peasant holdings as part of the package of commutation in order to consolidate them into family farms; urban investors bought up holdings from tenants of the Church for the same purpose.

At the same time that peasant smallholdings were being consolidated, manorial lords were breaking up their demesnes. In the thirteenth and fourteenth centuries, most of the land still in demesne was broken up into family farms.³¹ Some historians have seen this as a consequence of commutation: with ‘free’ peasant labor no longer available, landlords found hiring labor too expensive, and instead let out their lands. The driving force of the process, however, was not the higher cost of labor but the greater productivity of the family farm. A landlord could earn more in rent from family farmers than he could earn from cultivating his estate directly himself with hired labor—or even with ‘free’ labor.

The most difficult land to restructure was peasant land that was controlled communally under the open field system. Consequently, this was usually the last to be restructured. Restructuring such land generally meant ‘enclosure’: this entailed the privatization of common land and the amalgamation of scattered strips in open fields to form closed consolidated holdings. In many cases, the process proceeded peacefully and without opposition. But villagers sometimes resisted, and then enclosure required political action or even the use of force.³²

Restructuring in general and enclosure in particular were costly. The expense and effort were worthwhile only if the resulting gains in productivity exceeded the cost of

²⁹(Ganshof and Verhulst 1966), (Jones 1968)

³⁰(Goldstone 1988) p 300, (Whittle 2000)

³¹(Ganshof and Verhulst 1966), (Jones 1968)

³²The best-known enclosures of the period were the mostly peaceful Tudor enclosures of sixteenth-century England: (Overton 1996), (Goldstone 1988).

restructuring.³³ One study found that enclosure raised rents, and so land values, by about 30%.³⁴ This suggests that the cost threshold must have been quite high. The potential gains from restructuring were, of course, highest in regions exposed to the market, so it is not surprising that restructuring and enclosure took place there first.³⁵ In many cases, restructuring was accompanied by radical changes in land use—for example, from field crops to pasture or vice versa.³⁶ The substantial gain from switching to a more profitable use helped to tilt the balance in favor of restructuring.

New land

The inter-related processes of expanding markets, urban growth, rising agricultural prices, and increasing productivity due to reorganization, all contributed to a steady rise in the value of agricultural land.³⁷ The rising value of land made it profitable to invest in increasing its supply.

Before the eleventh century, European settlement was relatively sparse. In the North, much of the land was covered by forests and swamps; in the South, agriculture was largely limited to bottomlands, with the hills remaining uncultivated. Now landowners expanded into neighboring wasteland by clearing forests, draining swamps, and terracing hillsides.³⁸ In some coastal regions, first in Picardy and Flanders and later in the Netherlands, land was reclaimed from the sea.

³³(Goldstone 1988) emphasizes the need to overcome the fixed costs of restructuring.

³⁴(Overton 1996), writing of the eighteenth-century enclosures in England.

³⁵Writing of the eighteenth-century enclosures in England, (Szostak 1991) suggests that there was a connection between improvements in transportation linking a region with the London market and subsequent enclosures. (p 29)

³⁶In regions where joint production of arable and livestock was replaced by specialization in either, the open-field system soon disappeared (Dahlman 1980).

³⁷The rising value of land was not, as is sometimes suggested, a Malthusian result of increasing population pressure. If this had been the case, average income would have been falling: in fact, it was rising.

³⁸In England the cultivated area increased by about 25% during the twelfth and thirteenth centuries (Dyer 2005).

From the twelfth century, this ‘internal colonization’ was supplemented by external colonization: Western Europeans began to occupy and develop lands outside their traditional territories. German princes and crusading orders conquered vast territories in eastern Europe; the Crusaders conquered territories in the Levant.

New land, whether through internal or external colonization, was from the beginning developed for market production rather than for subsistence farming.³⁹ Developers had to attract skilled farmers whose greater productivity would enable them to pay rents high enough to cover the costs of development. To attract such farmers, the land was structured from the outset as family farms and offered to settlers on generous terms.⁴⁰

The opportunity to settle on the new land offered farmers an attractive alternative to remaining where they were. As a result, owners of existing land had to compete for good tenants. This increased the pressure for restructuring.

A change in the relationship between lords and peasants

The transition to an agriculture of independent family farms changed profoundly the relationship between those who controlled the land and those who worked it. Manorial lords and their subject peasants became—or were replaced by—landlords and farmers. While a peasant holding his land under feudal tenure and a farmer leasing his land were both called ‘tenants’, the two relationships were entirely different.

The relationship of the manorial lord to the peasant was one of rulership: the ‘rent’ the peasant paid his lord was in fact tribute. Although constrained by custom, tribute was based on superior force, and its amount was arbitrary and uncertain. It depended on the will and power of the lord and on the willingness and the ability of the peasant to resist.

In contrast, the relationship between landlord and farmer was consensual; it was based not on coercion but on mutual gain. The tenant farmer paid the landlord a contractual rent: the terms were settled and certain. Unlike the feudal peasant, the farmer was the owner of his agricultural enterprise. That is, he operated it largely free of

³⁹The reclaimed and colonized areas of Flanders and Holland, for example, in contrast with areas of longer settlement, were free of feudal encumbrances ((Nicholas 1992), (de Vries and van der Woude 1997) Ch. 5)

⁴⁰(Bartlett 1993)

interference, and once he had met his contractual obligations, whatever remained—the profit—was his alone.

Of course, lords still possessed superior force. They could, and sometimes did, rely on force to bias the terms of contracts in their own favor or to change the terms after the fact. However, their ability to do so was constrained by competition. Landlords competed for tenants—both with one another and with the new opportunities offered by colonization and by the urban economy. A landlord who failed to offer competitive terms or who failed to respect his contracts would attract only the worst tenants or no tenants at all.

The financing of fixed and working capital

A family farm producing for the market needed not only labor and land, but also financing—for both fixed capital and working capital. The fixed capital of an enterprise is the total value of the long-lived assets it uses in the process of production. Its working capital is the value of resources that must be invested in the process of production before the output can be sold.

The fixed capital of the family farm included its land, and we have seen how this was financed. But it included other items too. There were improvements to the land, such as hedging, drainage and terracing. There were orchards and vineyards. There were various kinds of livestock—draft animals, animals raised for meat, and those kept for their produce. There were structures, such as barns, mills, and presses. And there were implements and equipment, such as ploughs, hoes, and harnesses.

A family farm's working capital included its outlays on seed, manure, and fodder, and on wages paid to hired workers. It included, too, the subsistence of members of the household employed on the farm. The total amount of working capital needed was uncertain, since output depended on the vagaries of nature and prices depended on the vagaries of the market. In a bad year, the farm might fail to recover its working capital, and it would therefore require additional working capital if it was to continue to produce.

To some extent, the family farm relied on its own resources to finance its fixed and working capital. However, those with the skill to be successful farmers did not necessarily possess the resources required. So the development of external financing was an essential part of the reorganization of agriculture into independent family farms.

Not only the leasing of land, but also the leasing of livestock was widespread. The wealthy invested in herds or flocks that they then leased out to farmers. Ordinary city folk, village tradesmen, and even farmers themselves might invest in individual animals and lease them out.⁴¹

When the land of a farm was leased, its non-land fixed capital was often provided by the landlord—a practice that became more common with growing competition for desirable tenants.⁴² Poorer tenants also received working capital from their landlords.⁴³

In some regions, wealthier tenant farmers themselves invested in improvements, structures, and plantings. They were protected from losing their investments by the customary rolling over of leases and by provisions in the lease for compensation in case it was not rolled over.⁴⁴ In other regions, where such protection was less reliable, tenant farmers preferred to invest in more mobile capital such as livestock and equipment.⁴⁵

Those who owned land—whether farmer-owners or landlords—could finance their capital needs by borrowing against the land. The principal instrument of secured lending was the *rente*, a form of annuity, which first appeared in northern France and the Low Countries in the twelfth century. By the late thirteenth century there was a well-organized market for *rentes*, and their use had become widespread.⁴⁶ The development of this market allowed agriculture to draw on the resources of the nobility and clergy and on the growing wealth of urban investors.

A common way of financing working capital was through a forward sale. The lender would advance cash or supplies to the farmer, and the farmer would repay—in product—at harvest-time. The lenders were often merchant middlemen seeking to ensure their

⁴¹((Jones 1968), (Farmer 1991)

⁴²(Toch 1986)

⁴³This was quite common in the case of share leases ((Epstein 1998), (Jones 1968), (Toch 1986)).

⁴⁴(de Vries 1974) on Holland. (Laven 1966) on northern Italy.

⁴⁵(Clay 1984)

⁴⁶(Duby 1968), (van Bavel 2008). We will have more to say about the development of this instrument in Chapter 9.

supply of product. Indeed, in thirteenth century England, Italian merchants managed to capture most of the trade in wool by providing cash advances to the producers.⁴⁷

In some parts of Europe, another way of financing working capital—usually only in emergencies—was borrowing from moneylenders; these were mostly Jews or ‘Lombards’ (Italians).⁴⁸ Most often, however, farmers relied on their own resources to finance their working capital.

The agriculture of family farms was more productive than the subsistence-tribute agriculture it replaced. Producers had stronger incentives, and markets for land, labor and financing allowed resources to move to where their productivity was highest. However, not all the possible gains of reorganization had yet been realized.

Full commercialization and specialization

While the family farm did produce for the market, it sold only a part of its output. Much of its effort went into satisfying its own needs—the subsistence needs of the household and the need for inputs such as fertilizer and young livestock. Production, therefore, was only partly commercialized and specialized: full commercialization and specialization would yield substantial additional increases in productivity.

Two problems, however, stood in the way. The first was that full commercialization meant that the farm would depend for its subsistence and for critical productive inputs on the vagaries of the market.⁴⁹ The second problem was that specialization in a single crop would make the farm’s labor requirements highly seasonal. In some seasons—particularly at harvest time—it would need a great deal of labor; in others, far less.⁵⁰ Only when markets had developed sufficiently to provide solutions to these two problems did full commercialization become profitable, or even feasible.

⁴⁷(Prestwich 1979)

⁴⁸(Grantham 2007)

⁴⁹(Wickham 2005), (Britnell 2001)

⁵⁰In the production of cereals, for example, some seasons required double the labor needed in others ((Grantham 1993)).

Depending on the market for subsistence, inputs, and consumer goods

Self-sufficiency in the basic necessities—especially grain—was not only safer, but initially it was also cheaper. Small-scale production for own consumption was inefficient, but the cost of the alternative—grain imported from other regions—remained high initially because of high transportation costs.

From the fifteenth century, however, Dutch grain merchants succeeded in progressively lowering the cost of transportation.⁵¹ This resulted in growing imports of grain from the Baltic and a steady decline in the price of imported grain throughout northwest Europe. In some places, imported grain became cheaper than that produced locally.

In addition, the growing Dutch domination of the long-distance trade in grain led to its increasing concentration in Amsterdam. Concentrating the trade in a single market in this way stabilized prices and increased the reliability of supplies.⁵²

With cheaper and more reliable imports, farmers were able to focus completely on producing for sale, while purchasing in the market the grain they needed for their subsistence. In an extreme example, farmers in one region of the Netherlands found it profitable to specialize in growing wheat, selling all they produced, and buying imported rye (a cheaper grain) to feed their own households.⁵³

Markets also developed for the inputs farmers needed for production. As we have seen, traditional European agriculture was mixed: family farms obtained the fertilizer they needed for their fields by keeping animals. However, as the market developed, farms increasingly specialized in either field crops or animal husbandry, with the former purchasing fertilizer for their fields from the latter. Similarly, rather than growing fodder themselves, farms that specialized in animal husbandry could purchase it from other farms that specialized in its production.⁵⁴

⁵¹As we saw in Chapter 2.

⁵²(Glamann 1972) See Chapter 7 for more on the development of the grain market.

⁵³(de Vries and van der Woude 1997) Ch. 6

⁵⁴(de Vries and van der Woude 1997) Ch. 6. Of course, purchasing inputs rather than producing them increased working capital and with it the need for external financing.

Traditionally, rural households devoted a part of their efforts to producing for themselves the consumer goods they needed—for example, cloth and household utensils. However, as inexpensive consumer goods began to appear on the market, they began to purchase these instead and to focus their efforts entirely on farming. Development of the market, therefore, made it possible and profitable not only to specialize *within* agriculture, but also to specialize *in* agriculture.⁵⁵

Relying on the market to address seasonality in labor demand

Having enough labor on hand to meet peak demand for a particular crop would have meant that much of that labor would have stood idle in less busy seasons.⁵⁶ Family farms addressed this problem initially by producing multiple crops with staggered peak demands to smooth out the total need for labor. Full specialization, however, eliminated this possibility. Making the problem worse, farms in a given region tended to specialize in the same crop, which synchronized their peak demand for labor.

So full specialization required either that supplementary employment be found for the local labor force outside the peak season or that non-local labor could be brought in to meet peak demand.⁵⁷ Development of the market opened up both of these avenues.

The expansion of trade in the long sixteenth century brought rural populations new opportunities for off-season employment—particularly in the Netherlands and in England. In the Netherlands, job opportunities opened up in peat digging, land reclamation, and boat and wagon transportation—and in the maritime regions also in shipping and ocean fishing.⁵⁸ In England, a wave of entrepreneurial ‘projects’ created opportunities for part-time employment in the brewing and distilling of alcoholic beverages, in the small-scale cultivation of new commercial crops such as woad and mulberry leaves, and in manufacturing (more on this below).⁵⁹ In both countries, as we

⁵⁵(Hymer and Resnick 1969)

⁵⁶(Brewster 1950)

⁵⁷(Grantham 1993)

⁵⁸(de Vries and van der Woude 1997) Ch. 6

⁵⁹(Thirsk 1978)

will see later in the chapter, the textile industry began to outsource a growing share of its production to the country.

With the development of regional labor markets, high rural wages at harvest times attracted increasing numbers of urban workers into the country for a few weeks to help bring in the harvest.⁶⁰ There was also another source of non-local labor—teams of migrant harvesters. These were skilled in the use of the scythe and moved from farm to farm and from region to region, much like the teams of combine harvesters in the United States today.⁶¹

As markets developed, therefore, family farms found they could rely on them more and more for grain for their subsistence, for inputs they needed for production, and for solutions to their peak-load labor problems. As a result, family farms were able to specialize completely, increasing their productivity and raising their incomes.

The geography of agriculture

Family farms in the same region tended to specialize in the same forms of agricultural production. They all faced similar relative prices and similar growing conditions, and they therefore tended to make similar decisions on what was most profitable to produce.

While there was some regional specialization during the early phases of commercialization, it became more pronounced only when family farms came to specialize completely.⁶² Regional specialization was stimulated by inter-regional competition, and this required transportation costs to be low enough to allow imported bulk goods to be competitive with local products. Consequently, extensive regional specialization had to await the inter-regional trade in bulk goods that developed during the long sixteenth century.⁶³

The different types of comparative advantage

To some extent the resulting geographic pattern of specialization reflected classical considerations of comparative advantage, with each region specializing in those products

⁶⁰(Van der Wee 1993) Ch. 3

⁶¹See (Epstein 1991) Ch. 4 on fifteenth-century Sicily.

⁶²(de Vries 1974)

⁶³See Chapter 2.

that best suited its natural conditions.⁶⁴ For example, the Baltic, cold and wet, specialized in grain and timber, while sunny Portugal and Spain supplied northern Europe with wine, olive oil, citrus, and cork.⁶⁵

Market expansion induced this kind of specialization by changing the relative profitability of different crops for individual producers. For example, before there was much inter-regional trade, wine was produced all over northwestern Europe. But when the market in wine expanded during the thirteenth century, the regions that were best suited to viticulture, especially Gascony and the Rhine Valley, experienced a growing demand for their product, and they increased their output. At the same time, growers elsewhere found themselves unable to compete with wines from these regions, either in price or in quality, and switched to other, more profitable crops.

Comparative advantage depended not only on growing conditions but also on transportation costs. The price at the farm gate—the price to which producers responded—reflected the price of produce in the destination market but also the cost of getting it there. Transportation costs are particularly important in agriculture, because most agricultural produce is heavy and bulky relative to its value. Since transportation costs increase with distance, distance to market was a major determinant of comparative advantage.⁶⁶

Consequently, it made sense to grow grain for the market only in regions that were close, in terms of transportation cost, to urban markets—either within a short distance by land or farther away but accessible by water. Regions that were less accessible from urban markets had to specialize in products with higher value relative to bulk or weight. Typically, this meant livestock and livestock products such as wool and hides. The animals themselves could be walked to market at reasonable cost, and livestock products

⁶⁴The concept of comparative advantage originates with (Ricardo 1817).

⁶⁵(Davis 1973)

⁶⁶This was first noted by von Thünen in 1826. Land closer to urban markets was therefore more valuable and, as we will see in Chapter 5, it was farmed more intensively. Specialization according to differences in the relative scarcity of land (more scarce nearer to markets) can be seen as an example of the Hecksher-Ohlin version of the theory of comparative advantage. However, in this case the differences in factor abundance are themselves a consequences of differences in trading costs.

were valuable enough relative to weight and bulk and could therefore bear the cost of overland transportation. So inland areas of Spain, for example, raised sheep and inland areas of Eastern Europe raised cattle.⁶⁷

Regions close to urban markets because of their low transportation costs could be competitive with more distant regions that enjoyed better growing conditions. For example, silk was cultivated in Tuscany close to the silk industry and hops and barley were grown in the Netherlands to supply its breweries. One notoriously infertile region of England, the Breckland, was prosperous because of its comparative proximity to the London market: it made a good living raising barley for London breweries and rabbits for meat and fur.⁶⁸

The dynamics of comparative advantage

The comparative advantage of a given region might change over time with expansion of the market. This was because a region's comparative advantage depended on what other regions were included in the comparison. For example, in the earlier phases of commercialization, regions adjacent to urban markets specialized in the production of grain for those markets. But as transportation costs fell and the market expanded, the falling price of grain imported by sea made its local production unprofitable. Farmers in regions adjacent to urban markets consequently switched to other products in which proximity still gave them a strong advantage. For example, they might grow fruits and vegetables, or fatten livestock for slaughter, or produce fresh dairy products.⁶⁹

Comparative advantage could also change as a result of *contraction* of the market. For example, as we saw in Chapter 2, the rise in inter-regional transportation costs during the wars of the long fourteenth century greatly reduced maritime trade between regions. In some cases, this led to a substantial increase of trade within regions and to increasing sub-regional specialization within them.⁷⁰

⁶⁷Regions in which the open-field system emerged produced both grain for nearby urban markets and livestock for more distant markets (Dahlman 1980).

⁶⁸(Bailey 1989) quoted by (Grantham 1999).

⁶⁹(Hohenberg and Lees 1995), (de Vries and van der Woude 1997) Ch. 6, (Van der Wee 1963)

⁷⁰(Epstein 1991) Ch. 3 documents this for Sicily.

The multiplier effects of specialization

Finally, increasing regional specialization had multiplier effects. When a region came to specialize in fruit or vegetables, for example, it became a new market for grain and meat from other regions. This stimulated trade in these products, and other regions came to specialize in their production. Regional specialization therefore led to a growing trade among agricultural regions in addition to the basic trade between those regions and urban centers.

THE REORGANIZATION OF INDUSTRY

The reorganization of industry paralleled that of agriculture in some respects but differed in others. We will see that the differences stemmed from differences in the underlying technology and from differences in the nature of the product.

Industry, throughout our period, made up a much smaller part of the whole economy than agriculture. Even by the end of the period, fewer than ten per cent of the population made their living from manufacturing, mining, and construction.⁷¹ Within manufacturing, the largest industry by far was textiles—mostly woolens, but also linens, cottons, and silks. Other important manufactures included leather goods, ceramics and glass, paper, metal goods, ships, wagons, and containers.⁷² Throughout the period, mining meant principally the extraction of precious metals, especially silver. However, copper became important from the late fifteenth century, and the mining of iron and coal began to expand in the sixteenth.⁷³ During periods of economic and demographic expansion, construction was a major employer—especially residential construction in the growing cities. Our discussion here will focus on the reorganization of manufacturing—especially textiles.

In the subsistence-tribute economy of the post-Roman decline, most manufacturing was done in the country. Peasant households met their own needs for textiles, wooden utensils, pottery, baskets, salt, and food products; textile production in particular was a

⁷¹(Nef 1987) estimates for the sixteenth century two to three million in industry (workers and families) out of a total European population of 60-80 million

⁷²(Sella 1977)

⁷³(Nef 1964)

common secondary occupation for women.⁷⁴ There was some informal exchange of such goods at the local level, and peasants often had to supply manufactured goods, especially cloth, to their lords as part of their tribute.

There was some urban manufacturing in the few small towns and in the artisan quarters that grew up near the larger abbeys. Specialized urban artisans produced goods of better quality for the predatory class: such goods included weapons and tools, leather goods, clothing, and food products.

The response of industry to the expansion of the market came, as in agriculture, in phases. The initial response was much like that of agriculture, with manorial lords seizing the initiative and setting up command enterprises on their manors. Just as men were conscripted to work on the newly enlarged demesne, so women were mobilized to work in the lord's workshops producing textiles. Royal and ecclesiastical manors also organized the mining of iron and the production of pottery, glass, and salt. Some of this, like demesne agriculture, was on a relatively large scale, and all of the output was intended for sale in the market.⁷⁵

Urban production increased too. New coastal entrepôts, such as Dorstad in the Rhine delta and Hamwic (later, Southampton) in England, became centers of manufacturing as well as of commerce—producing textiles, pottery, and other goods for a growing inter-regional trade.⁷⁶

In the second phase, during the Commercial Revolution, there emerged a completely new form of industrial organization—one that I will call 'the new manufacturing'. It emerged first in textiles and later in other manufacturing industries.

We will see that the new form of organization consisted, as in agriculture, of a mass of specialized, household-centered enterprises—*family firms* rather than family farms. We will see too that these family firms depended, even more than did specialized family farms, on the support of the market.

⁷⁴(Verhulst 2002) Ch. 5

⁷⁵(Verhulst 2002) Ch. 5

⁷⁶(Wickham 2005) Chs. 10 and 11, (Campbell 2000) Ch. 8

The new manufacturing

The new manufacturing seems to have developed first in Flanders. Initially, when Flemish woolens were manufactured in the country, the entire process of production—from raising sheep to finishing cloth—was completed within the same rural household. In the eleventh century, however, Flemish merchants were no longer able to obtain enough product from these rural producers to meet the increasing demand for their cloth. They began, therefore, to organize additional production in the towns. There, because producers worked in much closer proximity, they were able to specialize in individual sub-processes, such as spinning, weaving, and dyeing and they gradually came to do so.

Specialization and scale

The reorganization of manufacturing took a different form from that of agriculture, because the technology was different. In manufacturing, unlike in agriculture, the timing of the process of production was not dictated by nature. As a result, the different stages of production could be carried out simultaneously and continuously. This made it possible for producers to specialize in a particular stage of production, with all the attendant gains in productivity.

The division of labor could therefore be much finer in manufacturing than it was in agriculture—not only by product, but also by stage of production for a given product.⁷⁷ It textile production consisted of three stages—spinning, weaving, and finishing—it was possible for a producer to specialize not only in textiles but in weaving alone.

Such a finer specialization was possible, however, only when total output was large enough to keep all the specialized producers fully occupied. This connection between the total volume of output and the feasible division of labor created an economy of scale in manufacturing that was absent in agriculture.

For output to be large enough to support a significant division of labor, there had to be a market large enough to absorb it. Local markets were far too small, so the reorganization of manufacturing depended on the expansion of the market through the development of long-distance trade.

⁷⁷The difference between agriculture and industry in this respect is noted by (Smith 1976 [1776]).

Specialization by family firms

The division of labor in the new manufacturing was not, however, that of Smith's pin factory, with different producers specializing in different tasks within a single enterprise. Rather, each stage in the process of production was undertaken by a separate specialized enterprise. In the production of woolen textiles, for example, different enterprises specialized in spinning, weaving, fulling, dyeing, and finishing. There might be further specialization within each sub-process: individual dyers, for example, tended to specialize in particular colors.⁷⁸

The individual enterprise—the family firm—was typically quite small. It usually consisted of a single master working in his own home, drawing on his family for additional labor as needed, and training at least one child to take over the business. Larger enterprises might employ, in addition, one or more apprentices and a few journeymen. For example, one London bakery in 1619 employed, in addition to the master baker and his wife, two apprentices and four journeymen, with some help from the master's children.⁷⁹ It was rare for any industrial enterprise to employ more than a dozen workers.⁸⁰ The textile industry of Antwerp was typical: it consisted of some three hundred workshops, each employing four or five men.⁸¹

Dividing the process of production among multiple specialized enterprises allowed manufacturing to capture economies of scale at the level of the industry while retaining at the level of the enterprise the incentive advantages of the small owner-operator. The alternative of increasing the scale of the enterprise was problematic. The larger the enterprise, the harder it was for the master to supervise his subordinates and therefore to ensure the quality of his product. Moreover, market volatility and uncertain demand made investment in large-scale industrial facilities risky. So when demand increased, it was met not by an increase in the size of enterprises but rather by an increase in their number; in

⁷⁸(Van der Wee 1993) Ch. 11

⁷⁹(Palliser 1983) Ch. 8

⁸⁰(Nef 1964)

⁸¹(Van der Wee 1963)

an expanding market, it was relatively easy for a journeyman to leave his master and set up on his own.⁸²

Not that larger enterprises were never attempted. In sixteenth-century England, for example, some woolen manufacturers set up quite large establishments—the most famous being John Winchcombe’s factory at Newbury that boasted over a thousand employees.⁸³ Such large enterprises did not, however, prove economically viable. Presumably, the difficulty of supervising and motivating so large a number of employees kept productivity below that of better motivated family firms. In any case, these large enterprises were not imitated.⁸⁴ There were also some large-scale, state-owned enterprises such as the tapestry workshops established by the kings of France. But profitability was not a concern in these, and few were in fact profitable.

We have seen that a commercial agriculture of specialized family farms depended on a matrix of market support: indeed, the market was as much a part of its organization as were the family farms themselves. In industry, and particularly in manufacturing, the dependence on market support was, if anything, even greater.

Market support

The reorganization of manufacturing depended on the extent of the market and so on long-distance trade. But long-distance trade in manufactured goods involved some serious problems.

Long-distance trade in manufactures

Manufactured goods were almost endlessly variable and needed to be matched to consumer taste. For artisans serving a local market this was easy. Tailors, for example, could work to order to meet a customer’s specifications. In long-distance trade, however, cost and slow communications made direct contact between producer and consumer prohibitively expensive. As we saw in Chapter 2, long-distance trade depended on mediation by merchants.

⁸²(Supple 1977)

⁸³(Kellenbenz 1977) p470

⁸⁴(Palliser 1983) p 250

So it was merchant intermediaries who found the right goods for consumers and the right markets for producers. If necessary, merchants had goods modified to suit consumer tastes. Italian merchants, for example, imported unfinished woolen cloth from northwest Europe and had it dyed and finished in Italy to suit the tastes of different Mediterranean markets. As demand changed, merchants provided producers with feedback from the market. Long-distance trade involve a complicated problem of matching and mediation that depended on merchants for its solution.⁸⁵

Of course, mediating between producer and consumer exposed merchants to considerable risk. Since goods were not produced to order, merchants had to purchase them from producers ‘on spec’ and ship them off in the hope of reselling them at a profit. If the venture proved unsuccessful, it was the merchant who bore the loss.

The different nature of agricultural commodities and manufactured goods created another problem for long-distance trade. Agricultural commodities were ‘inspection goods’: potential buyers could ascertain their quality by examining them before purchasing. Manufactured goods, however, were ‘experience goods’: their quality became evident only with time—the durability of cloth, for example, or the stability of colors. Again, this was less of a problem for local trade: local artisans were motivated by considerations of reputation and repeat business to maintain the quality of their products. However, in long-distance trade individual producers and consumers did not know one another. So if long-distance trade was not to be hampered by a lack of trust, a different mechanism was needed.

One solution was for merchants to act as ‘trust intermediaries’. Unlike the final consumers, they did do repeat business with the same producers. And, unlike the individual producers, they could establish a reputation for quality with consumers. As we will see, there was also a quite different solution—for producers to establish a reputation for quality through joint action.

⁸⁵(Grantham 1999) “The markets of the pre-modern period were not Walrasian auctions, but matching processes operated by merchants...”p 218

A market for raw materials

The importance of raw materials was yet another difference between agriculture and manufacturing. Raw materials came in a great variety of types and qualities, and the better or cheaper materials could often be obtained only from distant sources. For example, for centuries the best wool came only from England, and the finest woolens could be made from nothing else. Consequently, while artisans catering to the local market often produced their own raw materials or purchased them locally, those hoping to compete in long-distance trade had to rely for their raw materials on the market.

Merchants located materials, and examined them and vouched for their quality.⁸⁶ They also organized transportation and broke down bulk quantities into smaller lots for sale to producers. Those producers who were well served by merchant suppliers had a competitive advantage over those who were not.

A market for intermediate goods

While production in agriculture took place mostly within a single enterprise, in the new manufacturing, as we have seen, it was divided among a sequence of specialized producers. So intermediate goods had to pass from one to the next.

But intermediate goods, like the finished product, were experience goods. This made cheating a potential problem. For example, spinners might adulterate the yarn they produced with cheaper materials; this might be hard to detect by inspection, but it would ultimately compromise the durability of the finished cloth.

Here, too, merchants were able to address the problem by acting as trust intermediaries.⁸⁷ Yarn brokers purchased regularly and in quantity from the same spinners, so the spinners had an incentive to maintain quality: the long-term benefits of

⁸⁶“The markets of the pre-modern period were not Walrasian auctions, but matching processes operated by merchants...”((Grantham 1999)p218). We saw in Chapter 2 that, by nature of their business, merchants had to be experts in assessing quality.

⁸⁷(Miskimin 1977) Ch. 4

continuing business with the broker outweighed the short-term gains from cheating. So weavers who purchased from yarn brokers could be assured of the quality of their yarn.⁸⁸

Relying on the market for subsistence

In contrast with specialization in agriculture, which was at first only partial, specialization within the new manufacturing was complete from the outset. The reason for this difference was the location of the new manufacturing in the cities rather than in the country. City dwellers were in any case dependent on the market for their subsistence, whatever their occupation.

Financing

We have seen that the organization of agriculture was partly shaped by the need to finance the large amount of fixed capital it required. In manufacturing, fixed capital was much less important.⁸⁹ Most manufacturing took place in the producer's home or in an adjacent workshop. Equipment was simple since there was relatively little mechanization (for reasons we will explore in Chapter 4).

The need for working capital

On the other hand, manufacturing did require large amounts of working capital. So the need to finance working capital shaped the organization of manufacturing much as the need to finance fixed capital shaped the organization of agriculture. Since the necessary financing came largely from merchants, this was yet one more way in which the new manufacturing depended on market support.

The amount of working capital needed was increased by the use of costly inputs. In luxury textiles, for example, the cost of the fiber and the dyes could approach eighty per cent of the total value of the finished product.⁹⁰ The amount of working capital was further increased by the division of labor across enterprises. The producer at the first stage of production, say the spinner, had to finance the fiber required to produce the yarn.

⁸⁸Of course, it was possible for weavers to purchase directly from spinners if they developed a long-term relationship with them or had other reasons to trust them.

⁸⁹Fixed capital was more important in other industries, such as mining and metallurgy. We will discuss its financing later in the chapter.

⁹⁰(Munro 1997)

The weaver had to finance the yarn that was needed to produce woven cloth—more valuable than the fiber because of the value added by the spinner. The finisher had to finance the unfinished cloth he needed as an input. At each stage of production, the input was an intermediate good that embodied all of the value added in earlier stages.

Sales credit

One way of financing working capital was through sales credit. For example, wool and linen weavers in Elizabethan Lancashire mostly used yarn imported from Ireland; they obtained this yarn on credit from merchant importers, and paid them only after they had sold the woven cloth.⁹¹

However, if the borrower was unable to sell his output at a price high enough to cover his debt, sales credit exposed the merchant to the risk of default. This risk was great when the value of inputs was high relative to the producer's income, when the producer was poor, or when the market was particularly volatile.

The domestic system

In such situations, merchants often used an alternative method of financing called by historians the 'domestic system'.⁹² Rather than selling the input to the producer on credit, the merchant retained ownership of it and paid the producer a fixed sum for his value added. For example, when dyeing cloth, the merchant retained ownership of the cloth, and contracted with the dyer to pay him a fixed sum for dyeing it. In this way the dyer was exposed only to the risk of his own business, dyeing, and not to the risk of the cloth market in general. The latter risk was born by the merchant, who was better able to bear it. The domestic system could also be seen as a form of secured lending: because the merchant retained ownership of the undyed cloth, it was as though he was 'leasing' working capital to the dyer.⁹³

The domestic system was not, however, without its own problems. Because it was demanding in terms of management, logistics, and record-keeping, transactions costs were significant. Merchants, especially early in the period and in the more backward

⁹¹(Wadsworth and Mann 1931)

⁹²Also as the *Verlagssystem*—translated as 'putting out'—and as the 'workshop system'.

⁹³The 'rent' on this lease was presumably implicit in the rate the merchant paid the dyer.

regions, were not always up to the task.⁹⁴ The domestic system also weakened incentives, because producers no longer had a direct interest in the overall profitability of the entire process of production. And the merchant, who did, had limited control.⁹⁵

Forward sales

In some industries, working capital was needed not so much for the purchase of inputs as for the payment of wages or for the subsistence of the producer during the process of production. In such cases, working capital could be financed through a forward sale. For example, merchants financed miners by purchasing their output in advance.

The guild as a framework for joint action

While joint action played only a minor role in the reorganization of agriculture, its role in the reorganization of industry was significant. Economies of scale and interdependence among producers created incentives for them to work together. This was particularly true for the new manufacturing, but it was true as well for other industries geared to long-distance trade and even for industries producing for the local market. The vehicle of joint action was the craft guild—a formal association of masters of a particular craft—which first appeared in the late eleventh century.⁹⁶

Establishing and protecting a brand name

The individual enterprise was too small and anonymous to establish a reputation for quality in a large, distant market. But a city was able to do so, because purchasers tended to identify non-local goods with the city from which they came. Consequently, producers in a city with a good reputation for quality could command premium prices for their product—much as large-scale producers of brand-name products do today.⁹⁷

⁹⁴(Van Werweke 1954) argues that the domestic system was infeasible in the twelfth-century Low Countries because of the lack of commercial sophistication and the absence of bookkeeping.

⁹⁵(Tawney 1925)

⁹⁶Craft guilds were apparently modeled on merchant guilds, which had appeared earlier, and on the religious societies that were associated with certain churches and monasteries (Epstein 1991). We will discuss merchant guilds in Chapter 6.

⁹⁷(Munro 1990)

There were, however, two obstacles to establishing and maintaining such a reputation—cheating by producers in the city itself and counterfeiting by producers elsewhere who tried to pass off their own product as originating in the city in question. There were economies of scale in reputation, but joint action was needed to overcome the obstacles and to capture those economies.

An individual producer within the city had an incentive to cheat. He could enjoy the city's price premium and do even better than his fellow producers by turning out goods of lower quality at less expense. This would, of course, damage the city's reputation, but the cheater himself would bear only an insignificant part of the resulting loss.

Guilds tried to prevent such cheating by policing the quality of their members' output.⁹⁸ To maintain standards, they regulated every aspect of production—from the form of the final product to the materials, equipment, and techniques used in producing it.⁹⁹ To enforce their standards, guilds and cities appointed inspectors to examine workshops and to monitor their output. In Hamburg, for example, tasters waited at the harbor exit to inspect the quality of exported beer.¹⁰⁰ Goods that passed muster were marked with the city seal. Unsealed goods, especially textiles, were viewed with suspicion by foreign buyers.¹⁰¹

Counterfeiters gained an undeserved price premium for inferior product, while undermining the reputation of the city whose product they copied.¹⁰² Counterfeiting also offered new producers an easy way to enter the market. For example, the Dutch initially entered the beer market by shipping their brew in recycled Hamburg casks.¹⁰³

One defense against counterfeiting was the use of municipal seals. Another was making the product difficult to copy by giving it a conspicuous observable trait—textiles with a distinctive color or weave, for example, or pewter that sounded with a particular

⁹⁸(Munro 1990); (Richardson 1999); (Epstein 1998)

⁹⁹See, for example, (Noordegraaf 1997) on the Leiden woolen industry, (Mazzaoui 1981) on Italian cottons, and (Unger 1989) on German beer.

¹⁰⁰(Unger 1989)

¹⁰¹(Munro 2000)

¹⁰²(Mazzaoui 1981); (Nicholas 1992)

¹⁰³(Unger 1989)

ring.¹⁰⁴ How to produce the identifying trait had, of course, to be kept a secret. And if counterfeiting could not be prevented it could be suppressed. To do so, guilds and cities relied on force—their own or that of the territorial ruler. For example, cities prohibited, or had the ruler prohibit, production of ‘their’ product in the country.¹⁰⁵

Interdependence, infrastructure, representation, and mutual aid

Another reason for joint action by industrial producers was interdependence. An important example of this was the training of apprentices.¹⁰⁶ Apprenticeship not only provided a training in the necessary skills but was also the way that proprietary knowledge—the ‘mysteries’ of the guild—was passed on to the next generation.

Guilds set standards for the pay and terms of employment of apprentices and for graduation to the status of master. This prevented opportunistic behavior on the part of masters and apprentices alike—for example, stealing apprentices trained by someone else or leaving a master before repaying him for valuable training.¹⁰⁷

Guilds also invested in physical and institutional infrastructure. For example, they established institutions of private order to reduce the cost of transactions among their members and between members and customers. Such institutions resolved disputes between members and provided dissatisfied customers with redress—in both cases more quickly and efficiently than did ordinary courts.¹⁰⁸

Yet another function of the guilds was to defend their members’ interests in disputes with other groups—with employees or employers, with merchants, and with members of other guilds. Such defense was usually political, with lobbying at the city or territorial level, but it could involve the use of force. For example, in the late thirteenth century a

¹⁰⁴(Richardson 2008)

¹⁰⁵For example, the ‘new draperies’ that the ‘three cities’ of Flanders tried to suppress in the thirteenth and fourteenth centuries were imitations of their trademark luxury woolens produced with inferior grades of wool (Nicholas 1992).

¹⁰⁶(Epstein 1998)

¹⁰⁷Regulation of apprenticeship did little to restrict entry (the monopolistic interpretation). Municipal supervision prevented it, and those not admitted had the choice of setting up shop in the country or in unregulated cities ((Lane 1973) Ch. 12; (Palliser 1983) Ch. 8.)

¹⁰⁸(Pirenne 1937), (Britnell 1996) Ch. 7

dispute between weavers and fullers in the Low Countries eventually escalated into all-out war between Flanders and France.

Joint action made sense in defending the group's interests, because of the benefits of group solidarity and because such defense was a public good: producers could not be excluded from the benefits even if they did not contribute to obtaining them.

The guilds also played a social role. They provided a framework for religious, social and charitable activity, especially mutual aid among their members.¹⁰⁹ Guild members had a strong sense of corporate identity, and this was reinforced by public display on saints' days and municipal festivals.¹¹⁰ The social function of the guild reinforced its economic function.¹¹¹ A member who broke the rules faced the loss of the social safety net the guild provided. In a highly uncertain world, this was a grave sanction.

Monopolization

Possessing a framework of joint action did, of course, facilitate monopolization. And indeed guilds did attempt to increase the profits of their members in this way. To this purpose, they limited competition among members—for instance, by prohibiting advertising. And they attempted to reduce competition from others—producers in the country and in other cities—by limiting their access to the market. Since successful monopolization generally required the use or threat of force, guilds lobbied with city or territorial governments for official grants of monopoly.¹¹²

Economists and historians have tended to see guilds primarily in this light—as 'combinations in restraint of trade'.¹¹³ However, recent research has challenged this view and has emphasized the many other economic functions of guilds.¹¹⁴ In particular, guilds

¹⁰⁹(Hunt and Murray 1999), (Palliser 1983) Ch. 8,

¹¹⁰(Hunt and Murray 1999)

¹¹¹(Richardson 1999), (Richardson 2005)

¹¹²Government-enforced monopolies in industry became important only from the sixteenth century. We will have more to say about them in Chapter 8.

¹¹³See, for example, (Ogilvie 2008).

¹¹⁴Among those who have challenged the traditional monopolistic view are (Hirshler 1954), (Lane 1973), (Palliser 1983), (Epstein 1998), (Richardson 1999), (Richardson 2004) and (Epstein 2008). We will discuss this question further in Chapter 6 with reference to merchant guilds.

were a necessary part of the organization of the new manufacturing. For example, without the ‘branding’ that they provided the long-distance trade in quality manufactures would have been smaller or non-existent. Moreover, guilds that produced for distant markets had little prospect of monopolization, since they faced intense competition there from the guilds of other cities.¹¹⁵

The geography of manufacturing

The reorganization of industry, like that of agriculture, had a geographic dimension. The important distinction in this case, however, was not between regions but rather between city and country. In the subsistence-tribute economy, as we have seen, most industrial production took place in the country. The new manufacturing was possible, however, only in cities.

The movement of manufacturing from the country to the cities

In the eleventh century the expansion of trade increased the demand for Flemish woolens in northern Italy beyond the capacity of rural and demesne producers to satisfy it. As a result, the merchants who traded the woolens began to organize production in the cities.¹¹⁶ It was this relocation that made possible the division of labor among enterprises that characterized the new manufacturing. Only within a city were trading costs sufficiently low: proximity lowered information costs, transportation costs, and transactions costs.¹¹⁷ Proximity also facilitated joint action through a guild.¹¹⁸ Moreover, only the dense commercial infrastructure of the cities could provide the market support and financing on which the new manufacturing depended.

As trading costs between cities fell, the division of labor among manufacturing enterprises expanded beyond the single city to span multiple cities within a region. In the medieval cotton industry of northern Italy, for example, yarn and warp threads were

¹¹⁵Given the product differentiation created by ‘brand names’, this was a case of monopolistic competition. (Munro 1990)

¹¹⁶(Van Werweke 1954), (Van der Wee 1993)

¹¹⁷See Chapter 2 on trading costs.

¹¹⁸(Munro 1998)

produced in Lombardy and woven on standardized looms all over the region.¹¹⁹

Similarly, in the sixteenth century, the arms industry of Amsterdam assembled weapons from parts imported from Liège and Solingen together with parts that were manufactured locally.¹²⁰

Outsourcing back to the country

Despite the advantages of the city, the country did have one important advantage—cheap labor. Labor was cheap in the country because, as we have seen, the agricultural demand for labor was seasonal: in the off-season there was a pool of idle labor available for other employment.¹²¹ Rural labor was not, however, quite as cheap as rural wages might suggest. Because rural workers often worked part-time, they were less skilled than urban workers, and it was also more difficult to monitor their work. There was no guild organization in the country: poor communications made the cost of supervision—the guild’s primary function—prohibitive.¹²² Rural workers were therefore less productive than urban workers.¹²³

Moreover, whatever advantage the country possessed in terms of cheaper labor was more than offset initially by its higher trading costs. Transportation and communications were slower and more expensive because of the greater distances, and commercial and financial infrastructure was largely lacking.

Over time, however, commercial textile manufacturing did expand into the country. Several changes contributed to this. Trading costs declined steadily as transportation and communications improved and commercial and financial infrastructure spread deeper into the country. Rising urban wages, particularly during the long fourteenth century, increased the attraction of cheap rural labor. And the growing demand for inexpensive

¹¹⁹(Mazzaoui 1981)

¹²⁰(Vogel 1998)

¹²¹Not all country regions were equally engaged in industry. (Thirsk 1961) argued that the pattern can largely be explained by the nature of the predominant crop and the resulting degree of underemployment of rural labor.

¹²²(Munro 1990)

¹²³(Munro 1998)

manufactures reduced the importance of a lack of skill among workers and of the difficulty of quality control.

Expansion into the country was facilitated by the structure of the new manufacturing. The division of labor broke production down into simpler sub-processes, some of which could readily be undertaken by less skilled workers.¹²⁴ Spinning was the classic example. In woollens, spinning accounted for about half of pre-finishing labor costs, and it required relatively little skill.¹²⁵ So as urban wages rose, spinning was the first sub-process to be outsourced to the country.

Rural manufacture of mass-market goods

Whether it paid to outsource further sub-processes depended on the nature of the final product. For the luxury textiles that were originally the exclusive objects of long-distance trade or even for the less luxurious but still fine textiles that came to dominate inter-zone trade during the Commercial Revolution, quality was the dominant concern.

However, for the mass-market textiles that became increasingly important during the long sixteenth century, cost was more important. In the manufacture of inexpensive woollens, for example, not only spinning but also weaving and fulling might be done in the country with only finishing remaining to be done in the cities.

Industries other than textiles followed a similar pattern—early stages of production in the country, finishing in the cities.¹²⁶ There are obvious parallels with the modern phenomenon of ‘offshoring’—the relocation of sub-processes from high-wage to low-wage countries.¹²⁷

A different way that commercial textile manufacturing developed in the country was through the commercialization of ‘subsistence’ manufacturing that already existed there. As we have seen, manufacture for own use and for local trade—particularly of textiles—was a normal side-activity of the rural household. As the inter-regional market for inexpensive textiles expanded, merchants saw a potential in particularly promising local

¹²⁴(Van der Wee 1993) Ch. 11.

¹²⁵(Munro 1998)

¹²⁶(Kellenbenz 1977) p 470; (Mazzaoui 1981) p 65 et seq.

¹²⁷See, for example, (Grossman and Rossi-Hansberg 2008)

products. For example, urban merchants in South Germany transformed the rural linen industry there, which had produced mainly for local consumption, into Europe's principal supplier of fustians, a cotton-linen mix.¹²⁸

There was yet another route to commercial manufacturing in the country—the establishment there of entirely new industries. As we saw earlier, the expansion of internal trade in sixteenth-century England opened up a large market for inexpensive manufactures. At the same time, there was a large pool of under-employed rural labor. Entrepreneurial ‘projectors’ seized the opportunity to organize production in the country of such manufactures as stockings, buttons, pins and nails, knives and edged tools, tobacco-pipes, pots and ovens, ribbons and lace, and linens.¹²⁹

The essential role of the cities

In all of these cases, however, commercial manufacturing in the country was an urban creation. Indeed, industrial production in the country, beyond that for own use or local trade, depended entirely on the provision of market infrastructure by urban merchants: the same, after all, was true of commercial agriculture. Urban merchants supplied rural producers with non-local raw materials, leased them the equipment they needed, marketed their output in distant markets, and provided them with financing.

Because rural producers were often poor, financing in the country often took the form of the domestic system. However, the extension of the domestic system to rural manufacturing exacerbated all its problems—quality control, embezzlement of materials and, above all, the huge commitment of working capital. It was precisely these problems that motivated the next great reorganization of manufacturing in the eighteenth century—the shift to factory production.¹³⁰

As rural textile manufacturing expanded, taking work away from the cities, the cities themselves moved ‘up-market’—not only in terms of processes but also in terms of products. For example, from the fourteenth century, the cities of Flanders and Brabant increasingly switched from producing cloth to finishing cloth manufactured in the

¹²⁸(Mazzaoui 1981)

¹²⁹(Thirsk 1978), (Palliser 1983) Ch. 8

¹³⁰(de Vries 1976), (Szostak 1991)

country (their own country and that of England). They also expanded into the weaving of tapestries, the tailoring of finished garments, and the manufacture of fashion accessories such as hats, gloves, purses, and jewelry.¹³¹ The value added in luxury products and in high-skill processes made the most of the human capital available in the cities and justified the high cost of labor there.¹³²

The complementarity between reorganization in agriculture and in manufacturing

The reorganization of agriculture and of industry in response to the expansion of the market were part of a more general reorganization of production that encompassed both. The reorganization of industry—especially the expansion of manufacturing into the country—facilitated full specialization in agriculture by providing off-season and supplementary employment for surplus rural labor.

But the reorganization of agriculture also helped make possible the growth of manufacturing in the cities. As farms became larger and agriculture more efficient, there was a steady flow of population out of the country and into urban areas.¹³³ The consequent shift of population from agriculture to industry and from the country to the cities was itself a part of the overall reorganization of production.

CONCLUSION

From the evidence of preindustrial Europe, we can draw some general lessons about how production is organized and how it is reorganized in response to market expansion.

The benefits of the social organization of production

In all human societies, the organization of production is social. Rather than people producing individually as isolated individuals, they do so jointly as part of a group. The size of the group may be small, as in the household or subsistence village, or it may be large, as in today's globalized economy.

¹³¹(Stabel 1997); (Nicholas 1992)

¹³²(Van der Wee 1993)

¹³³And into new lands opened up by colonization and reclamation.

Production is organized in this way, because the social organization of production is more productive. This is so because of the advantages of the division of labor and of joint action (the combination of labor).

The division of labor increases productivity because of the benefits of specialization. As Adam Smith noted, specialization fosters the development of skills and the application of ingenuity and technology; it also economizes on the transition between different tasks. And specialization enables individuals to make the best use of their particular talents and circumstances.

Joint action increases productivity because it allows producers to capture various economies of scale: at a larger scale, many activities can be undertaken in ways that are more efficient and less costly. Economies of scale are often a consequence of indivisibilities—as we saw in Chapter, in the case of commerce.¹³⁴ Joint action can also address externalities—situations in which the actions of one producer affect, for good or for ill, the productivity of others. Joint action may be necessary too to provide certain goods or services that are ‘public’ in nature—increasing the productivity of the group but not profitable for any individual enterprise to supply or provide.¹³⁵

The three basic structures of organization

Capturing the benefits of social organization requires that the activities of different producers be coordinated. Such coordination generally involves some combination of the three basic structures of organization—the enterprise, the association, and the market.

The *enterprise*, the basic unit of production, consists of a group of individuals whose production is coordinated directly by command or by agreement. Examples in agriculture include the lord’s demesne and the family farm, and in industry, the lord’s workshop and the family firm. Modern forms of enterprise include partnerships and corporations.

¹³⁴The division of labor being limited by the extent of the market is another example of an economy of scale that results from indivisibilities.

¹³⁵A good is public if it is non-rival and non-excludable. It is non-rival if its enjoyment by one person does not preclude its enjoyment by others: a loaf of bread is rival, knowledge is not. A good is non-excludable if people who do not pay for it cannot be prevented from enjoying it: peace or the beauty of a cathedral (at least of its exterior) are non-excludable.

The *association* consists of a group of individuals or enterprises, whose production is coordinated in some respects by command or by agreement, while they remain free to act individually in others. Examples of producer associations include the village under the open field system and the artisan guild. Modern examples of producer associations include farmers' and manufacturers' associations and trade unions.

The *market* consists of a group of individuals, enterprises, or associations that interact through exchange and whose production is coordinated implicitly by the terms of that exchange. For example, higher prices provide an incentive to increase production of a particular good; lower prices, to reduce it.¹³⁶ The market is the encompassing structure, within which enterprises and associations operate.

Exchange in the market can take the form of direct exchange between enterprises—for example, between specialized spinners and weavers. It can take the form of structured exchange—for example, the ordered, weekly sessions of a local market. But mostly, the market takes the form of indirect exchange mediated by commerce.

Each of the three structures of organization—enterprise, association, and market—have advantages and disadvantages relative to the others.¹³⁷ For example, all three support the division of labor, but only the enterprise and the association can support joint action.¹³⁸

Because of their different advantages and disadvantages, the social organization of production will involve different combinations of the three structures in different circumstances and at different times. For example, the importance of associations in preindustrial Europe changed over time. In agriculture, association in the form of the village played a vital role in coordinating the open field system. When the open field system was replaced by family farms, there remained in general little reason for joint

¹³⁶A major concern of economic theory is to demonstrate the ability of the market to coordinate production effectively.

¹³⁷There is a literature in economics that compares the relative merits of enterprise and market (the 'firm versus the market') in different circumstances. Another literature examines the feasibility of socialism—which is, essentially, the organization of the whole of the economy as a single enterprise.

¹³⁸The inability of the market to support joint action is described in the conventional theory, somewhat strangely, as 'market failure'.

action among agricultural enterprises.¹³⁹ In manufacturing, the role of artisan guilds rose and fell with the relative importance of product quality. Guild influence grew during the Commercial Revolution when inter-zone trade was dominated by fine textiles. It began to decline during the long sixteenth century with the expansion of inter-regional trade in inexpensive manufactures—textiles, in particular. And artisan guilds declined fastest in precisely those regions where the production of inexpensive manufactures grew most rapidly—in England and in the Netherlands.¹⁴⁰

Market expansion induces reorganization

Expansion of the market increases the potential benefits from the social organization of production. It does so primarily by increasing the total volume of production available to be organized. Market expansion can take two forms. One is increased exchange among those already connected by the market—internal expansion¹⁴¹. The other is an increase of the size of the group connected through exchange to include more producers over a larger territory—external expansion. In both cases, increased exchange means a greater volume of production that can be reorganized to increase productivity. External expansion also increases the range of talents, resources, and conditions encompassed by the market.

Both internal and external expansion make possible a greater division of labor and more extensive joint action. Adam Smith captured this idea in his famous dictum, ‘the division of labor is limited by the extent of the market’.¹⁴² We need to generalize this a

¹³⁹There were, however, specific exceptions. For example, in Spain, enterprises that raised sheep, mainly for wool, joined together to form an association, the Mesta ((Drelichman undated 2007?)). They did so because their flocks migrated long distances each year from summer to winter pasture, and it made sense for them to negotiate for rights of passage along the way as a group. The Mesta also represented owners in negotiations with the Crown over taxation.

¹⁴⁰On England, see (Reed 1973) and (Kellenbenz 1977); on the Netherlands, see (Kellenbenz 1977) and (de Vries and van der Woude 1997). (Richardson 1999) argues that there was also a fall in the value of the guilds' social and religious services at this time.

¹⁴¹We saw in Chapter 2 that commercialization of the non-market economy was an important component of internal expansion.

¹⁴²By the division of labor, Smith meant not only the division of labor within an enterprise—his pin factory—but also a general division of labor within society. This he illustrated with the parable of the simple workman’s woolen coat—“the produce of the joint labour of a great multitude of workmen”. The

little, however, since organization encompasses more than just the division of labor. The more general version might be ‘the social organization of production is limited by the extent of the market’.¹⁴³

Market expansion makes possible an increase in productivity. Realizing this potential requires changes in how production is organized. This may involve changes in the combination of the three basic structures of enterprise, association, and market; it may involve changes in the form of those structures; and it may also involve the creation of completely new structures.

There are also other changes that can increase the potential benefits of the social organization of production and so lead to reorganization. Some improvements in the technology of production may require changes in organization to take advantage of them. Improvements in the technology of organization itself may make possible improvements in organization that raise productivity. For example, ‘just in time production’ would not be possible without today’s rapid means of communication. A fall in trading costs, particularly in the cost of transportation, can make possible a reorganization of production that raises productivity—for example, containerization and globalization.

We will see that changes such as these are themselves part of the process of economic progress and therefore a consequence, direct or indirect, of market expansion. We will see in Chapters 4 and 5 how market expansion induces technological progress. We saw in Chapter 2 that market expansion induces improvements in the productivity of commerce; we will see in Chapters 6 and 7 that these include improvements in the technology of organization and in transportation and communications.

The central role of commerce

Commerce plays a central role in the process of raising productivity through the reorganization of production. Reorganization depends on expansion of the market, and

multitude included not only the specialized workers of the textile industry, but also those who produced the raw materials and equipment they used, and so on in an endless chain. ((Kennedy 2008)).

¹⁴³(Spulber 2009) proposes a similar generalization of Smith: “The establishment of complex economic institutions depends on the extent of the market. The greater the extent of the market, the more economic institutions such as firms, markets, and organizations are established. This recalls Adam Smith’s observation that the realization of economies of scale depends on the extent of the market.” p4

markets expand only when merchants see profitable new opportunities for trade and exploit those opportunities. A merchant might, for example, have noticed that the local wine sold in England was inferior to that produced in Gascony as well as being more expensive. He would have taken advantage of this situation by purchasing a quantity of wine in Bordeaux and shipping it to England for sale there.

Often, it is commerce that is responsible for the reorganization of production that market expansion makes possible. For example, as we have seen, it was Flemish merchants who organized the production of woolens in the towns when they were no longer able to obtain sufficient product from their traditional suppliers in the country.

Commerce is also an integral part of the new social organization of production that results. One of the three basic structures of organization is the market, and the market is created by merchants. For example, in the new manufacturing, it was merchants who marketed the output, who procured the inputs, and who coordinated the production of specialized producers.

REFERENCES

- Allen, D. W. and D. Lueck (1998). "The Nature of the Farm." Journal of Law and Economics **Vol. 41, No. 2**(Oct.): 343-386.
- Allen, R. C. (1999). "Tracking the agricultural revolution in England." Economic History Review **52(2)**: 209-235.
- Allen, R. C. (2000). "Economic structure and agricultural productivity in Europe, 1300-1800." European Review of Economic History **v4p1**(April): 1-26.
- Bailey, M. (1989). A marginal economy? : East Anglian Breckland in the later Middle Ages. Cambridge [England], Cambridge University Press.
- Bartlett, R. (1993). The making of Europe : conquest, colonization, and cultural change, 950-1350. Princeton N.J., Princeton University Press.
- Bates, R. H. (1988). "Lessons from History, or the Perfidy of English Exceptionalism and the Significance of Historical France." World Politics **Vol. 40, No. 4**.(Jul.): 499-516.
- Braudel, F. (1972). The Mediterranean and the Mediterranean world in the age of Philip II. New York, Harper & Row.
- Brewster, J. M. (1950). "The machine process in agriculture and industry." American journal of agricultural economics **32(1)**: 69-81.
- Britnell, R. H. (1996). The Commercialisation of English Society, 1000-1500. Manchester, Manchester University Press.
- Britnell, R. H. (2001). "Specialization of work in England, 1100-1300." Economic History Review **54 (1)**: 1-16.
- Britnell, R. H. (2004). Britain and Ireland 1050-1530 : economy and society. Oxford ; New York, Oxford University Press.
- Campbell, J. (2000). The Anglo-Saxon state. London ; New York, Hambledon and London.
- Clay, C. G. A. (1984). Economic expansion and social change: England 1500-1700. Cambridge, Cambridge University Press.
- Dahlman, C. J. (1980). The open field system and beyond : a property rights analysis of an economic institution. Cambridge ; New York, Cambridge University Press.
- Davis, R. (1973). The rise of the Atlantic economies. Ithaca, N.Y., Cornell University Press.
- de Vries, J. (1974). The Dutch rural economy in the Golden Age, 1500-1700. New Haven, Yale University Press.
- de Vries, J. (1976). Economy of Europe in an Age of Crisis 1600-1750. Cambridge, Cambridge University Press.

- de Vries, J. and A. van der Woude (1997). The First Modern Economy: Success, Failure, and Persistence of the Dutch Economy, 1500-1815. Cambridge, Cambridge University Press.
- Drelichman, M. (undated 2007?). License to Till: The Privileges of the Spanish Mesta as a Case of Second Best Institutions. University of British Columbia, Department of Economics.
- Duby, G. (1968). Rural economy and country life in the medieval West. Columbia, University of South Carolina Press.
- Dyer, C. (1995). Were peasants self sufficient? English villagers and the market, 900-1350. Campagnes médiévales : l'homme et son espace : études offertes à Robert Fossier. E. Mornet. Paris, Publications de la Sorbonne: 736.
- Dyer, C. (2005). An age of transition? : economy and society in England in the later Middle Ages. Oxford ; New York, Oxford University Press.
- Epstein, S. A. (1991). Wage labor & guilds in medieval Europe. Chapel Hill, University of North Carolina Press.
- Epstein, S. R. (1991). An island for itself : economic development and social change in late medieval Sicily. Cambridge [England] ; New York, Cambridge University Press.
- Epstein, S. R. (1998). "Craft Guilds, Apprenticeship, and Technological Change in Preindustrial Europe." Journal of Economic History **58**(3): 684-713.
- Epstein, S. R. (1998). The peasantries of Italy, 1350-1750. The Peasantries of Europe from the Fourteenth to the Eighteenth Centuries. T. Scott. London, Longman.
- Epstein, S. R. (2008). "Craft guilds in the pre-modern economy: a discussion." Economic History Review **61**(1): 155-174.
- Farmer, D. (1991). Marketing the produce of the countryside, 1200-1500. The Agrarian history of England and Wales: Vol. III 1348-1500. E. Miller. London, Cambridge U.P.
- Fenoaltea, S. (1975). "Authority, Efficiency, and Agricultural Organization in Medieval England and Beyond: A Hypothesis." The Journal of Economic History **Vol. 35, No. 4**(Dec.): 693-718.
- Fisher, F. J. (1961). Tawney's Century. Essays in the economic and social history of Tudor and Stuart England in Honor of R.H. Tawney. F. J. Fisher. Cambridge, Cambridge University Press.
- Ganshof, F. L. and A. Verhulst (1966). Medieval agrarian society in its prime: France, the Low Countries and Western Germany. The Cambridge economic history of Europe 2nd ed.. v. 1. The agrarian life of the Middle Ages. M. M. Postan and H. J. Habakkuk. Cambridge, Cambridge U. P.
- Glamann, K. (1972). European trade 1500-1750. The Sixteenth and Seventeenth Centuries. C. M. Cipolla. Brighton, England, Harvester Press: 427-526.

- Goldstone, J. A. (1988). "Regional ecology and agrarian development in England and France." Politics & Society **16**(June/Sept): 287-334.
- Grantham, G. (1999). "Contra Ricardo: On the macroeconomics of pre-industrial economies." European Review of Economic History **3**: 199-232.
- Grantham, G. (2007). What's space got to do with it? Distance and agricultural productivity before the railway age, Department of Economics, McGill University.
- Grantham, G. W. (1993). "Divisions of labor: agricultural productivity and occupational specialization in pre-industrial France." Economic History Review **46**: 478-502.
- Grossman, G. M. and E. Rossi-Hansberg (2008). Trading Tasks: A Simple Theory of Offshoring Princeton University.
- Hansmann, H. (1996). The Ownership of Enterprise. Cambridge, Mass., Belknap Press of Harvard University Press.
- Hayami, Y. and K. Otsuka (1993). The economics of contract choice : an agrarian perspective. Oxford, Clarendon Press.
- Hirshler, E. E. (1954). "Medieval Economic Competition." Journal of Economic History **Vol. 14, No. 1**(Winter): 52-58.
- Hohenberg, P. M. and L. H. Lees (1995). The making of urban Europe, 1000-1994. Cambridge, Mass., Harvard University Press.
- Hopcroft, R. L. (1999). Regions, institutions, and agrarian change in European history. Ann Arbor, University of Michigan Press.
- Hunt, E. S. and J. M. Murray (1999). A History of Business in Medieval Europe, 1200-1550. New York, Cambridge University Press.
- Hymer, S. H. and S. Resnick (1969). "A Model of an Agrarian Economy with Nonagricultural Activities." American Economic Review **59**(4): 493-506.
- Jones, P. J. (1968). From manor to mezzadria: A Tuscan case study in the medieval origins of modern agrarian society. Florentine studies: politics and society in Renaissance Florence. N. Rubinstein. London,, Faber: 546, [542].
- Kellenbenz, H. (1974). Rural industries in the West from the end of the Middle Ages to the eighteenth century. Essays in European Economic History, 1500-1800. P. Earle. Oxford, Clarendon Press.
- Kellenbenz, H. (1977). The organization of industrial production. The Economic Organization of Early Modern Europe. E. E. Rich and C. H. Wilson. Cambridge, Cambridge University Press: 462-549.
- Kennedy, G. (2008). Adam Smith : a moral philosopher and his political economy. Basingstoke [England] ; New York, Palgrave Macmillan.
- Kislev, Y. and W. Peterson (1982). "Prices, Technology, and Farm Size." Journal of Political Economy **v90 n3**(June): 578-595.

- Lane, F. C. (1973). Venice, a maritime republic. Baltimore, Johns Hopkins University Press.
- Laven, P. (1966). Renaissance Italy, 1464-1534. London,, Batsford.
- Macfarlane, A. (1978). The Origins of English Individualism: The Family, Property, and Social Transition. New York, Cambridge University Press.
- Masschaele, J. (1997). Peasants, merchants, and markets: inland trade in medieval England, 1150-1350. New York, St. Martin's Press.
- Mazzaoui, M. F. (1981). The Italian cotton industry in the later Middle Ages, 1100-1600. Cambridge, Cambridge University Press.
- McDonald, J. (1998). Production Efficiency in Domesday England, 1086. London, Routledge.
- Miskimin, H. (1977). The Economy of Later Renaissance Europe. Cambridge, Cambridge University Press.
- Munro, J. H. (1990). Urban regulation and monopolistic competition in the textile industries of the late-medieval Low Countries. Textiles of the Low Countries in European economic history: Session B-15 Proceedings, Tenth International Economic History Congress, Leuven, August 1990. E. Aerts and J. H. Munro. Leuven, Belgium, Leuven University Press: 41.
- Munro, J. H. (1997). The origin of the English 'new draperies': the resurrection of an old Flemish industry, 1270-1570. The New Draperies in the Low Countries and England, 1300-1800. N. B. Harte. Oxford, Oxford University Press: 35-128.
- Munro, J. H. (1998). The Symbiosis of Towns and Textiles: Urban Institutions and the Changing Fortunes of Cloth Manufacturing in the Low Countries and England, 1280 - 1570. Department of Economics, University of Toronto. **UT-ECIPA-MUNRO-98-03**.
- Munro, J. H. (2000). Flemish Woollens and German Commerce during the Later Middle Ages: Changing Trends in Cloth Prices and Markets, 1290 - 1550. Department of Economics, University of Toronto.
- Nef, J. U. (1964). The conquest of the material world. Chicago, University of Chicago Press.
- Nef, J. U. (1987). Mining and metallurgy in medieval civilization. Cambridge Economic History of Europe: II, Trade and Industry in the Middles Ages. M. M. Postan and E. Miller. Cambridge, Cambridge University Press: 693-762.
- Nicholas, D. (1992). Medieval Flanders. London, Longman.
- Noordegraaf, L. (1997). The new draperies in the northern Netherlands, 1500-1800. The New Draperies in the Low Countries and England, 1300-1800. N. B. Harte. Oxford, Oxford University Press: 173-196.
- Ogilvie, S. (2008). "Rehabilitating the Guilds: A Reply." The Economic History Review , New Serie **Vol. 61, No. 1**(Feb.): 175-182.

- Overton, M. (1996). Agricultural revolution in England: the transformation of the agrarian economy 1500-1850. Cambridge, England ; New York, Cambridge University Press.
- Palliser, D. M. (1983). The Age of Elizabeth : England under the later Tudors, 1547-1603. London ; New York :, Longman,.
- Pirenne, H. (1937). Economic and Social History of Medieval Europe. New York, Harcourt Brace.
- Powelson, J. P. (1988). The story of land : a world history of land tenure and agrarian reform. Cambridge, MA, Lincoln Institute of Land Policy.
- Power, E. E. (1942). The wool trade in English medieval history, being the Ford lectures. [London, New York, etc.], Oxford University Press.
- Prestwich, M. (1979). Italian merchants in late thirteenth and early fourteenth century England. The Dawn of Modern Banking. New Haven, Yale University Press: 77-104.
- Reed, C. G. (1973). "Transactions costs and differential growth in seventeenth century Western Europe." Journal of Economic History **33**: 177-190.
- Reynolds, S. (1997). Kingdoms and communities in Western Europe, 900-1300, 2nd ed. Oxford, Clarendon Press.
- Ricardo, D. (1817). On the principles of political economy and taxation. London, J. Murray.
- Richardson, G. (1999). The Organization of Manufacturing in Medieval England: A Link Between Social and Economic Change Ph.D. Dissertation, University of California, Berkeley.
- Richardson, G. (2004). "Guilds, Laws, and Markets for Manufactured Merchandise in Late-Medieval England." Explorations in Economic History **Volume 41, Issue 1**(January): 1-25
- Richardson, G. (2005). "Craft Guilds and Christianity in Late-Medieval England: A Rational-Choice Analysis." Rationality and Society **17 (2)**: 139-189.
- Richardson, G. (2008). Brand names before the Industrial Revolution, NBER.
- Scott, J. C. (1976). The moral economy of the peasant : rebellion and subsistence in Southeast Asia. New Haven, Yale University Press.
- Sella, D. (1977). European Industries 1500-1700. The Sixteenth and Seventeenth Centuries. C. M. Cipolla. NY, Harper & Row: 354-426.
- Slicher van Bath, B. H. (1977). Agriculture in the Vital Revolution. The Economic Organization of Early Modern Europe. E. E. Rich and C. H. Wilson. Cambridge, Cambridge University Press: 42-133.
- Smith, A. (1976 [1776]). An Inquiry into the Nature and Causes of the Wealth of Nations. Chicago, University of Chicago Press.

- Spulber, D. F. (2009). The theory of the firm : microeconomics with endogenous entrepreneurs, firms, markets, and organizations. Cambridge ; New York, Cambridge University Press.
- Stabel, P. (1997). Dwarf among giants: The Flemish Urban Network in the Late Middle Ages. Leuven, Apeldoorn.
- Supple, B. (1977). The nature of enterprise. The Economic Organization of Early Modern Europe. E. E. Rich and C. H. Wilson. Cambridge, Cambridge University Press: 393-461.
- Szostak, R. (1991). The Role of Transportation in the Industrial Revolution: A Comparison of England and France. Montreal, McGill-Queen's University Press.
- Tawney, R. H. (1925). Introduction. A Discourse Upon Usury [1572]. T. Wilson. New York, Harcourt Brace.
- Thirsk, J. (1961). Industries in the countryside. Essays in the economic and social history of Tudor and Stuart England, in honour of R. H. Tawney. F. J. Fisher. Cambridge, Cambridge University Press.
- Thirsk, J. (1978). Economic Policy and Projects: The Development of a Consumer Society in Early Modern England. Oxford, Clarendon Press.
- Toch, M. (1986). "Lords and peasants: A reappraisal of the medieval economic relationships." The journal of European economic history **v15**: 163-182.
- Unger, R. W. (1989). Grain, beer and shipping in the North and Baltic seas. Medieval Ships and the Birth of Technological Societies 1: Northern Europe. C. Villain-Gandossi, S. Busuttil and P. Adam. Malta, Foundation for International Studies: 121-135.
- van Bavel, B. J. P. (2008). "The organization and rise of land and lease markets in northwestern Europe and Italy, c. 1000–1800." Continuity and Change **23 (1)**: 13–53.
- Van der Wee, H. (1963). The Growth of the Antwerp Market and the European Economy. The Hague, Martinus Nijhoff.
- Van der Wee, H. (1993). The Low Countries in the Early Modern World. Aldershot, Variorum.
- Van Werweke, H. (1954). "Industrial growth in the Middle Ages: The cloth industry of Flanders." The economic history review **2nd series v6n3**: 237-245.
- Verhulst, A. E. (2002). The Carolingian Economy. New York, Cambridge University Press.
- Vogel, H. (1998). Arms production and exports in the Dutch Republic, 1600-1650. Exercise of arms : warfare in the Netherlands, 1568-1648. M. v. d. Hoeven. New York, Brill: xi, 235.
- Wadsworth, A. P. and J. D. L. Mann (1931). The cotton trade and industrial Lancashire, 1600-1780. Manchester, Manchester university press.

- Whittle, J. (2000). The development of agrarian capitalism : land and labour in Norfolk,1440-1580. Oxford, Oxford University Press.
- Wickham, C. (2005). Framing the early Middle Ages : Europe and the Mediterranean, 400-800. Oxford ; New York, Oxford University Press.