

**HOW AND WHY ECONOMIES DEVELOP AND GROW: LESSONS
FROM PREINDUSTRIAL EUROPE AND CHINA**

CHAPTER 3

THE REORGANIZATION OF PRODUCTION

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ABSTRACT: Expansion of the market raised productivity by inducing improvements in the organization of production. This chapter begins with a discussion of why production is in fact organized. It then describes how the organization of production changed in agriculture and in industry as the market expanded.

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Commerce promotes production through expansion of the market. Expansion of the market raises productivity and increases supply. This creates a supply multiplier that feeds back to generate further expansion of the market and continued economic growth. In this chapter and the two that follow we will examine how expansion of the market raises productivity.

A rise in productivity is an increase in the output that can be produced from given resources. How much output can be produced from given resources depends on how the economy is organized and on the technology that it uses. So a rise in productivity must be the result either of better organization or of better technology.¹

As we saw in Chapter 1, the Ricardian theory assumes that the economy is producing at the full potential defined by its technology. This means, implicitly, that organization cannot be improved. It is a natural Ricardian error, therefore, to ignore the possibility of improved organization and to attribute all increases in productivity to improvements in technology.

In the current chapter we will see that in preindustrial Europe expansion of the market did lead to improvements in organization. In Chapter 4, we will see that it was these improvements, together with the expansion of the market, that were the principal causes of technological progress. In Chapter 5 we will see how the agents of commerce—merchants and cities—were directly involved in reorganization, technological progress, and economic growth.

THE ORGANIZATION OF PRODUCTION

Before we see how the organization of production improved in response to the expansion of the market, we need to understand why production is organized in the first place.

Production, in all human societies, is social. That is, people produce not as isolated individuals but as a part of a group or a society. They do so because social production is more productive. The reasons for this are the advantages of the division of labor on the one hand and of joint action—of the combination of labor—on the other.

¹Griliches (1987)

The division of labor raises productivity because of gains from specialization. Specialization fosters the development of skills and the application of ingenuity; it also allows individuals to exploit their particular talents and circumstances by doing what they do best.

Joint action raises productivity in several ways. First, it permits producers to capture economies of scale: when undertaken on a larger scale, some activities are more efficient or less costly. Economies of scale, as we saw in Chapter 2 are often a consequence of indivisibilities. Joint action can also address externalities—situations in which the actions of one producer unintentionally affect, for good or for ill, the productivity of others. Joint action may also be necessary to produce certain goods or services necessary for production that are ‘public’ in nature.²

To capture the benefits of social production, the activities of different producers must be coordinated: that is, they must be organized in some way. Such organization generally relies on some combination of three basic structures—the enterprise, the association, and the market. The *enterprise*, the basic unit of production, consists of a group of producers whose activities are directed by command. One example of an enterprise is the family or household; another is the modern corporation. The *association* consists of a group of individual producers or a group of enterprises that collaborate in some ways but remain free to act individually in others. Examples include the tribe, the medieval guild, and the modern industry association and trade union. The *market*, unlike the enterprise and the association, involves no explicit direction or collaboration. Rather, it coordinates the activities of different producers and enterprises implicitly through the incentives it creates.

Each of these three structures—enterprise, association, and market—has its advantages and disadvantages relative to the others as a form of organization.³ For

²A 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.

³A major concern of economic theory is to demonstrate the ability of the market to organize social production effectively. There is a sub-literature that compares the relative merits of enterprise and market

example, all three support the division of labor, but only the enterprise and the association can support joint action.⁴ Because of their different relative advantages, the organization of social production will in different circumstances involve different combinations of the three structures.

The potential benefits of social production increase with the extent of participation—with the number of producers involved and with the area of territory encompassed.⁵ Greater participation allows for a finer division of labor and for more extensive joint action. Expansion of the market increases the potential benefits of the social organization of production. because it increases the potential extent of participation.

To capture this increased potential, however, the organization of production must develop and adapt. Typically, changes in the market component of organization lead the way. Indeed, these changes are themselves often the cause of market expansion. Existing forms of enterprise and association adapt to changes in the market, and new forms of enterprise and association emerge.

In preindustrial Europe, the reorganization of agriculture and of industry proceeded somewhat differently because of different underlying technologies. We therefore examine each separately.

THE REORGANIZATION OF AGRICULTURE

Because the preindustrial economy was overwhelmingly agricultural, agricultural productivity was particularly important for overall productivity and income. Agriculture—including fisheries and forestry—employed most of the labor force and produced most of the output.⁶ Agriculture produced not only food but also most industrial

(the ‘firm’ versus the market) in different circumstances. Another sub-literature examines the feasibility of socialism—essentially the organization of the whole of society as a single enterprise.

⁴The inability of the market to support joint action is described in economics, somewhat strangely, as ‘market failure’.

⁵This is a generalization of Smith’s dictum that the division of labor is limited by the extent of the market.

⁶Braudel (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

raw materials—particularly those used by the textile industry.⁷ Moreover, agriculture was 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.⁸

As we saw in Chapter 2, Europe at the nadir of the post-Roman decline had regressed to an economy of subsistence and tribute. Beginning in the seventh century, however, the slow expansion of the market brought about a gradual commercialization of agriculture. It is useful to divide this process into three phases. In the first, there was a partial reorientation of subsistence-tribute agriculture to production for exchange, with little alteration in the tribute-subsistence structure itself. In the second phase, the subsistence-tribute structure underwent a process of ‘privatization’, reorganizing into an agriculture of independent family farms. However, these family farms continued to produce largely for subsistence, with only a fraction of their output directed to the market. In the third phase, family farms became specialized and began to produce solely for the market.

The timing of these phases differed in different parts of Europe. In terms of our periodization, the first phase took place before the beginning of the Commercial Revolution, the second during the Commercial Revolution and the Long Fourteenth Century, and the third during the Long Sixteenth century and beyond. On the whole, change came earlier in the urbanized central regions of northern Italy and the Low Countries (we shall see why in Chapter 5).

It must be emphasized, however, that even by the end of our period only a few regions were fully commercialized. Many others remained in phase two, or even in phase one—some of them well into the nineteenth century.⁹

force in agriculture (without fisheries and forestry) in 1600 to range from 49% in the Netherlands to slightly under 70% in England and France.

⁷Slicher van Bath (1977); Masschaele (1997) Ch. 2

⁸Fisher (1961)

⁹de Vries (1974)

Reorientation of subsistence-tribute agriculture to the market

In subsistence agriculture, the basic form of enterprise was the autonomous household—a married couple and their children, with perhaps one or two elderly relatives or unfree servants—working 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 provided one another with insurance against individual misfortune. The village, however, played no role in coordinating production. Market interaction was limited and rudimentary—largely confined to the village itself. The village was therefore, of necessity, economically self-sufficient. Tribute altered this structure hardly at all. The only change was that the lord took a part of the peasants' output, usually in kind. The village, as an association, now took on the additional function of intermediating between the lord and the villagers.¹⁰

The productivity of subsistence-tribute agriculture was generally low. Its objective was to ensure survival rather than to maximize output.¹¹ As a result, producers diversified their crops rather than specialized, and they favored the most reliable varieties and techniques over those that promised higher but more uncertain yields. Furthermore, 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.¹² There was little incentive for exertion beyond that needed for subsistence: any additional output was likely to be taken in increased tribute or lost to sharing with less fortunate neighbors. And if some surplus nonetheless remained, there was no market outlet for it.

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

¹⁰Wickham (2005), Reynolds (1997)

¹¹Scott (1976)

¹²Dyer (1995)

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.¹³ 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—typically a quarter to a third of the total cultivated area of the manor. It emerged in response to the market expansion of the eighth and ninth centuries.¹⁴ The earliest of the new demesnes produced mainly wine, but later many produced grain for the growing cities and for the Carolingian armies.

The new, much larger, demesne was created by taking land 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. Why did organizational adaptation to the expanding market take this particular form? It did so because demesne agriculture offered two important advantages—speed of response and lower trading costs.

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 crops and techniques that had long stood them in good stead. And they lacked the resources needed for investment or to tide them over a period of costly experimentation. So, rather than waiting for their tenants to respond and then collecting the increased tribute, manorial lords themselves took the initiative.¹⁵

Demesne agriculture also had an advantage with respect to trading costs. The formal market did not initially penetrate very deep into the country. There were to begin with no local market centers that could have aggregated the output of small producers for long-distance trade—leaving tenants with little incentive to reorient their production to the market. However, the demesne could produce a large enough quantity to make it

¹³Verhulst (2002), Wickham (2005)

¹⁴See Chapter 2.

¹⁵Fenoaltea (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.

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 crop. To lower transactions costs even further, merchants often contracted to take the crop for several years in advance—an arrangement that would have been impracticable with a multitude of small producers.¹⁶

The open field system appeared somewhat later than the demesne, possibly in the eleventh century. By then many local markets had sprung up, allowing and inducing peasants as well as lords to produce for exchange.¹⁷ The open field system was a particular adaptation of subsistence agriculture that facilitated production for the market of both arable and livestock.¹⁸ Self-sufficient subsistence agriculture was naturally mixed. Animals were needed primarily for their manure but also provided meat and wool; they were typically fed on pasture during the day and folded on the arable land at night. With exposure to the market, for reasons we will see below, regions tended to specialize. Some engaged in arable farming for the market, others raised livestock for the market. But in some intermediate regions a combination of both offered agricultural producers the best return.

In the open field system, the arable land of the village was divided into two or three large fields, which rotated among crops and fallow. Within each field, every household cultivated one or more strips; the lord's demesne also took a share of each field. This system allowed livestock to be grazed on the fallow fields and on the cultivated fields after harvest—increasing livestock production without reducing arable. This would not have been economical without pooling individual holdings into open fields, because of the cost of preventing animals from straying from one small fallow plot onto a neighboring one where crops were growing. Essentially, the efficient scale for raising livestock was much larger than that for arable, and this system allowed both to operate at the appropriate scale.

The open field system necessitated a great deal of coordination and policing. It required joint decisions, for example, on times of planting and harvesting, on which crops

¹⁶See Power (1942) on the evolution of the marketing of wool in England.

¹⁷The first evidence of the open-field system dates from the twelfth century Reynolds (1997).

¹⁸Dahlman (1980)

to plant, and on the hiring and compensation of herdsmen. The necessary associational function was performed by village councils and village or seigniorial courts.¹⁹

Both demesne agriculture and the open field system were organizational innovations: the former was a new type of enterprise; the latter was a new application of association to the coordination of production across enterprises. However, both were adaptations of existing structures: the demesne expanded the lord's home garden and the peasant labor requirements that already existed for other purposes; the open field system recruited the existing village association to perform a new function.

Both forms of organization were characteristic of regions of strong seigniorial control—of 'feudalism': the demesne was possible only where lords were powerful enough to impose it; the open field system was possible only in regions where there existed strong village associations—which also tended to be regions in which lords were powerful and where villagers therefore needed a strong association to represent their interests.²⁰ However, despite this tie with feudalism, 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 self-sufficient subsistence.

Despite these adaptations, 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 had little incentive to exercise much effort or care, and the steward's supervision could not make up for their lack of motivation. Effort and care are particularly important in agriculture because of the heterogeneity of conditions and the constantly changing challenges of nature (although they matter more for some crops than for others). The open field system provided stronger motivation, since each household worked for itself. However, the cooperative structure made it difficult to adapt to changing market circumstances. In both cases, land and labor were largely locked in place: resources might be earning a poor return on one place when they could have been more fruitfully employed somewhere

¹⁹Dahlman (1980), Reynolds (1997)

²⁰Hopcroft (1999), Reynolds (1997)

else. One study has estimated that agricultural output in Domesday England could have been increased by 40% simply by allowing manorial estates to trade land and labor with one another.²¹

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

Reorganization into independent family farms

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.²² Such a self-employed owner-operator has the strongest motivation for effort and care. In activities other than agriculture, the incentive advantages of the owner-operator must often be weighed against economies of scale. Large-scale production often requires a different form of enterprise that is inferior in terms of incentives. In agriculture, however, there is no such trade-off, because economies of scale are few—some in the raising of livestock, but hardly any in arable farming.²³ Consequently, the most productive form of enterprise in agriculture has always been the independent family farm.²⁴

It is important to distinguish the family farm from the household of the farmer. As agriculture reorganized, the two overlapped to a considerable extent but were nonetheless distinct. Members of the farmer’s household often worked on the family farm, but they also worked elsewhere. As a market for labor developed, they could hire out their labor to

²¹McDonald (1998)

²²This definition of ownership is that of Hansmann (1996).

²³Researchers find that larger farms were in general no more productive than smaller farms (Bates (1988); Allen (1999); Overton (1996)). The same seems to hold today: Kislev and Peterson (1982).

²⁴Allen 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 the 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 prohibited.

other enterprises — agricultural and non-agricultural. Indeed, 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 on a seasonal and on a permanent basis.

It is important, too, to distinguish the family farm from the land that 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 that was owned by others. Conversely, land owned by the farmer’s household might be worked by others rather than by the family farm.

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 finance.

In the eleventh and twelfth centuries, under the pressure of the expanding market economy, feudal servitudes of all kinds were increasingly commuted—that is, converted to money payments. Instead of tribute in labor and kind, peasants now had to pay tribute in cash. While commutation did not necessarily mean the end of formal serfdom, servile status increasingly became a social rather than an economic distinction.²⁵ Commutation was to the benefit of both parties. Peasants were now free to use their resources of labor and land in the most productive way. Lords could replace forced labor on their demesnes with better-motivated hired labor. And they no longer had to sell tribute in kind to obtain the cash they needed to purchase consumption goods or to meet their own feudal obligations.²⁶ Of course, commutation only became possible once markets existed in which peasants could sell their produce to obtain the money they needed.

²⁵In sixteenth century England, for example, servile status did not prevent some serfs from becoming wealthy industrialists. William Haynes of Castlecombe was the owner of three fulling mills. However, as a serf, he still had to ask his lord’s permission for his daughter to marry outside the estate. (Kellenbenz (1974))

²⁶At 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 8.

The freeing of land from feudal, family, and community restrictions proceeded more slowly.²⁷ 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.²⁸ 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.²⁹

While some potential farmers already owned the land they required or were able to purchase it, many lacked the necessary resources. They could nonetheless obtain the use of the land if someone was able and willing to provide the necessary financing. Any such arrangement requires that the provider of 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 forms of secured financing—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 possession. Because the asset is already his property, a lease generally gives the lender better legal protection. For reasons we shall explore in Chapter 7, the secured loan was slower to develop than the lease, and it

²⁷The 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).

²⁸Macfarlane (1978)

²⁹Epstein (1991) Ch. 4

was rarely used to finance the purchase of land. So the main way for the family farm to gain the use of land it did not own was through a lease.³⁰

Leasing emerged first in the urbanized central regions of northern Italy and the Low Countries and somewhat later in England, France, and Germany.³¹ 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 (the landlord's share varied, but it was most commonly a half).³²

Initially, both types of lease were to be found wherever leasing emerged. Over time, however, fixed-rent contracts came to predominate in some regions and share contracts in others.³³ The fixed-rent contract provided the strongest incentives to the farmer, since all the gains of the enterprise were his once he paid his rent. However, if the farmer was unable to pay, the fixed-rent contract was subject to default, with all the attendant difficulties and costs. Default was indeed a concern, because agriculture was subject to the risks both of nature and of volatile product markets (the extent of the risk therefore varied by region and crop). The risk of actual default, however, depended on the wealth of the tenant: a wealthier tenant could absorb any losses and still pay his rent. The share contract provided weaker incentives—the farmer had to divide his gains with the landlord, who became a part-owner of the enterprise—but its built-in flexibility avoided the costs of default. In regions where risk was great and farmers were poor, the share contract tended to predominate; elsewhere, fixed rents were the norm, since the stronger incentives raised productivity and hence the return to both farmer and landlord.

The separation of ownership from use through leasing made land an attractive asset for urban investors. The interest of merchants in acquiring land as an asset stimulated the development both of the market for land and of the practice of leasing.

³⁰“The modern word ‘farmer’ derives from the medieval use of the Latin word *firarius* to mean a leaseholder.” Britnell (2004) p436

³¹In England, the practice of leasing entire manors was common in the twelfth century, but this was more akin to tax farming (see Chapter 7) than to the type of leasing discussed here.

³²Strictly, the term farmer (*fermier*) was applied only to the holder of a fixed-rent lease. A sharecropper was called a *métayer*.

³³Ganshof and Verhulst (1966), Jones (1968)

The formation of family farms, whether the farmer worked his own land or leased it, required the creation of holdings of an appropriate size. What was appropriate depended, of course, on the circumstances. Where agriculture was oriented to the market and more advanced, farmers were skilled professionals with good alternatives available to them. To be worth their while, holdings had to be relatively large. In more backward areas, where agriculture was still geared principally to subsistence, holdings were much smaller.

How land was restructured to produce holdings of the appropriate size also depended on the circumstances.³⁴ 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.³⁵ In northern Italy, landowners bought up peasant holdings as part of the package of peasant manumission in order to consolidate them into family farms; urban investors bought up holdings from tenants of the Church with the same purpose in mind.

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.³⁶ 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 cost of labor but the productivity of the family farm. A landlord could earn more in rent from family farmers than he could in income 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’—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

³⁴Ganshof and Verhulst (1966), Jones (1968)

³⁵Goldstone (1988) p 300, Whittle (2000)

³⁶Ganshof and Verhulst (1966), Jones (1968)

opposition. But it was sometimes resisted and then required political action or even the use of force.³⁷

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 restructuring.³⁸ One study found that enclosure raised rents, and so land values, by about 30%.³⁹ 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.⁴⁰ Moreover, in many cases, restructuring was accompanied by radical changes in land use—for example, from arable to pasture or vice versa.⁴¹ The substantial gain from switching to a more profitable use helped to tilt the balance in favor of restructuring.

The restructuring of existing land was accompanied by the opening up of new land. Until the eleventh century, European settlement was relatively sparse. In the North, much of the land was covered by forests and swamps; in the South, cultivation was largely limited to bottomlands, with the hills remaining barren. 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.⁴² The rising value of land made it profitable to invest in increasing its supply.

³⁷The best-known enclosures of the period were the mostly peaceful Tudor enclosures of sixteenth-century England: Overton (1996), Goldstone (1988).

³⁸Goldstone (1988) emphasizes the need to overcome the fixed costs of restructuring.

³⁹Overton (1996), writing of the eighteenth-century enclosures in England.

⁴⁰Writing 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)

⁴¹In regions where joint production of arable and livestock was replaced by specialization in either, the open-field system soon disappeared Dahlman (1980).

⁴²The rising value of land was not, as is sometimes suggested, a Malthusian result of rising population pressure. If this had been so average incomes would have been falling: in fact, they were rising.

Landowners expanded into neighboring wasteland—clearing forests, draining swamps, and terracing hillsides.⁴³ In some coastal regions, first in Picardy and Flanders and later in the Netherlands, land was reclaimed from the sea. 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.

The development of new land, whether through internal or external colonization, was oriented from the beginning not to subsistence farming but to production for the market.⁴⁴ The new land was structured as family farms and offered to settlers on generous terms. It had to be in order to attract good settlers who would be able to pay the rents that would make the whole undertaking profitable.⁴⁵ And the opening up of new land, by offering farmers an attractive alternative, added to the pressure for restructuring the old.

The transition from subsistence-tribute agriculture to an agriculture of independent family farms involved, therefore, a profound change in the relationship between those who controlled the land and those who worked it. Manorial lords and 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 quite 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, subject to the will and power of the lord. In contrast, the relationship between landlord and farmer was based not on coercion but on mutual gain and it was consensual. The tenant farmer paid the landlord a contractual rent: the terms were settled and certain. The farmer, unlike the feudal peasant, owned his agricultural enterprise. That

⁴³In England the cultivated area increased by about 25% during the twelfth and thirteenth centuries Dyer (2005).

⁴⁴The 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)

⁴⁵Bartlett (1993)

is, he controlled its operation largely free of interference, and once he had met his contractual obligations, what remained was his own.

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 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.

A family farm producing for the market needed not only labor and land, but also capital—fixed capital and working capital. The fixed capital of an enterprise is the total of long-lived assets that it uses in the process of production. The fixed capital of the family farm—apart from the land itself—consisted of improvements to the land (hedging, drainage and terracing); structures (barns, mills and presses); implements and equipment (ploughs, hoes, and harness); orchards and vineyards; and livestock. The working capital of an enterprise is the value of resources that must be invested in the process of production before the output can be sold. The family farm's working capital included its outlays on seed, manure, fodder, and hired labor, as well as the living expenses of family members employed on the farm. The total amount of working capital that would be 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 farmer might fail to recover his working capital and would therefore require additional working capital if he was to continue to produce.

For his fixed and working capital the farmer relied both on his own resources and on external financing from others. Since those with the skill to be a successful farmer did not necessarily possess the required resources, the development of external financing was an important part of the reorganization of agriculture into independent family farms.

When farmers leased their land, the non-land fixed capital was often provided by the landlord—a practice that became more common as competition for desirable tenants increased.⁴⁶ Poorer tenants received from their landlords working capital as well: this was

⁴⁶Toch (1986)

common in the case of share leases.⁴⁷ In some regions, wealthier tenant farmers themselves invested in improvements, structures, and plantings: they were protected from losing their investments by the normally routine rolling over of leases and by provisions in the lease for compensation in case it was not rolled over.⁴⁸ In other regions, where such protection was less reliable, tenant farmers preferred to invest in more mobile capital such as equipment and livestock.⁴⁹ The leasing of livestock was widespread: the wealthy invested in herds or flocks that they leased out to farmers; ordinary city folk, village tradesmen, and farmers themselves invested in and leased out individual animals.⁵⁰

Owners of land—whether farmer-owners or landlords—could finance their capital needs by borrowing against the land. The principal instrument of secured borrowing was the *rente*, a form of annuity, which first emerged in northern France and the Low Countries in the twelfth century.⁵¹ By the late thirteenth century there was a well-organized market for *rentes*, and their use had become widespread. 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 form of external financing of working capital was the forward sale. The lender advanced cash or supplies to the farmer to be repaid at harvest-time in output. The lenders in such cases were often merchant middlemen seeking to ensure their supply of product. Indeed, in thirteenth century England, Italian merchants succeeded in capturing most of the supply of wool through their willingness to provide cash advances to producers.⁵² In some parts of Europe, farmers were also able, in times of emergency, to

⁴⁷Epstein (1998), Jones (1968), Toch (1986)

⁴⁸de Vries (1974) on Holland. Laven (1966) on northern Italy.

⁴⁹Clay (1984) reports that while English farmers who owned their land invested in improvements, tenant farmers invested primarily in livestock and equipment.

⁵⁰(Jones (1968), Farmer (1991)

⁵¹Duby (1968), van Bavel (2008). We will have more to say about the development of this instrument in Chapter 7.

⁵²Prestwich (1979)

turn to moneylenders—usually Jews or ‘Lombards’ (Italians).⁵³ For the most part, however, farmers relied on their own resources for 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. While the family farm did produce for the market, it sold only a part of its output. The rest went to satisfying directly the subsistence needs of the farmer’s household and to providing inputs, such as fertilizers and young livestock, for the process of production. As a result, production was only partly specialized. Full specialization would yield further increases in productivity.

Full specialization

There were, however, obstacles in the way of full specialization. A farm that produced solely for the market could no longer satisfy its own subsistence needs directly, nor could it produce for itself the various inputs that it required. Moreover, specialization in a single crop would make its need for labor highly seasonal, creating a peak-load problem of labor utilization. Full specialization was profitable, and indeed possible, only when markets were sufficiently developed to overcome these obstacles.

Some specialization had already taken place during the first and second phases of commercialization: demesnes and then family farms naturally produced for the market those crops they could sell most profitably. Nonetheless, they also continued to produce some or all of their own subsistence needs—particularly grain. They did so because, with transportation costs still high, it remained cheaper to produce grain for themselves—however inefficiently—than to buy imported grain, even if it was produced more efficiently elsewhere. People were also loathe to depend on a less than reliable market for the provision of their daily bread.⁵⁴

From the fifteenth century, however, Dutch grain merchants succeeded in lowering transportation costs significantly. As we saw in Chapter 2, this led to a steady expansion of grain imports from the Baltic, lowering the relative price of grain in northwest Europe.

⁵³Grantham (2007)

⁵⁴Wickham (2005), Britnell (2001)

It also led to an increasing concentration of the inter-regional grain trade in Amsterdam, stabilizing prices and increasing the reliability of supplies.⁵⁵ As a result, imported grain became cheaper in some places than grain produced locally. And with a more reliable supply, dependence on the market for subsistence was less risky. As a result, farmers began to specialize completely in production for the market, purchasing all the grain they needed for subsistence. In one extreme example, farmers in one region of the Netherlands found it profitable to sell all the wheat they produced, while buying imported rye (a cheaper grain) to feed their own households.⁵⁶

In the early phases of commercialization, agricultural producers generally produced for themselves whatever intermediate goods they required for production—fodder, fertilizer, breeding stock, equipment, transportation services, and so on. Only when they could purchase such intermediate goods cheaply and reliably did it become worthwhile for them to do so and to specialize completely in the production of final product.⁵⁷ For similar reasons, agricultural producers had continued to produce for themselves many of the consumer goods they needed—for example, housing, furniture, household utensils, and cloth. However, as the market for such goods developed, they came to rely on it exclusively and to focus their efforts entirely on agricultural production. Development of the market, therefore, made possible and profitable both specialization *within* agriculture and specialization *in* agriculture.⁵⁸

Any process of production involves a sequence of stages. In agriculture, unlike in industry, the timing of the sequence is largely dictated by nature. Moreover, some stages require more labor than others. In the production of cereals, for example, some stages require double the labor needed for others.⁵⁹ Consequently, the availability of labor

⁵⁵Glamann (1972) At the same time, the development of internal markets in the Netherlands and in England created large integrated markets for grain.

⁵⁶de Vries and van der Woude (1997) Ch. 6

⁵⁷de Vries and van der Woude (1997) Ch. 6. Of course, purchasing rather than producing intermediate goods increased the demand for working capital and so the need for external financing.

⁵⁸Hymer and Resnick (1969)

⁵⁹Grantham (1993)

sufficient to meet peak demand implies the idleness of some of it in the off-season.⁶⁰ During the early phases of commercialization this problem was mitigated by the agricultural enterprise producing multiple crops—with staggered peak demands—to smooth out the overall need for labor. Full specialization, however, eliminated this possibility. The problem was particularly acute, because all farms in a given region tended to specialize in the same crop, synchronizing their peak demand for labor. So full specialization required either that supplementary employment be found for the local labor force outside the peak seasons or that non-local labor could be called upon on to meet peak demand.⁶¹ Development of the market opened both of these avenues.

The expansion of trade in the long sixteenth century brought rural populations new opportunities for off-season employment. This was especially true in the Netherlands and in England, which both enjoyed a rapid expansion of their internal trade. In the Netherlands, job opportunities opened up in peat digging, in land reclamation, in boat and wagon transportation, and—in the maritime regions—in shipping and ocean fisheries.⁶² In England, a wave of entrepreneurial ‘projects’ created part-time employment in the manufacture of items such as stockings, buttons, and tobacco pipes, in the brewing and distilling of alcoholic beverages, and in the small-scale cultivation of new commercial crops such as woad and mulberry leaves.⁶³ In both countries, as we shall see later in the chapter, the textile industry began to outsource a growing share of its production to the country. Moreover, with the development of regional labor markets, urban workers regularly went into the country for a few weeks to help with the harvest, drawn there by high seasonal wages.⁶⁴ Also, teams of migrant harvesters, skilled in the use of the scythe, moved from farm to farm and from region to region much as combine harvesters do in the United States today.⁶⁵

⁶⁰Brewster (1950)

⁶¹Grantham (1993)

⁶²de Vries and van der Woude (1997) Ch. 6

⁶³Thirsk (1978)

⁶⁴Van der Wee (1993) Ch 3

⁶⁵See Epstein (1991) Ch. 4 on fifteenth-century Sicily.

With the obstacles to specialization removed by the development of the market, a fully commercialized agriculture began to emerge in parts of the Netherlands and of England. Farms in these regions specialized in high-value crops such as fruit, vegetables, flowers, hops, tobacco, and other industrial crops; they also specialized in dairy farming and in the fattening of beef cattle. There were parallel developments in a few other regions of Europe such as Andalusia and northern Italy.

While the role of the market in the organization of agriculture grew with increasing commercialization and specialization, the role of association generally declined. With the disappearance of the open field system, there was little in the way of economies of scale or externalities to necessitate joint action among enterprises. There were, however, some exceptions to this trend. In the Netherlands, the shared need to maintain and extend the system of dikes and drainage gave rise to the establishment of drainage boards at the local and district level.⁶⁶ These initially conscripted their members to do the necessary work. However, as agriculture in the region became more commercial and specialized, labor levies were replaced with land taxes, and these were used to hire professional personnel. In Spain, flocks of sheep migrated long distances from summer to winter pasture (transhumance). Since there are economies of scale and solidarity in negotiation, the owners joined together to form an association, the Mesta, to negotiate passage rights with landowners along the paths of migration.⁶⁷

The geography of agriculture

In addition to this ‘micro-reorganization’ at the level of the enterprise, there was a ‘macro-reorganization’ on a geographic scale. The latter was generated by the former. Since all producers in a region faced the same relative prices and the same conditions, they tended to make similar decisions on what to produce. The result of these individual decisions was, therefore, specialization by region.

To some extent regional specialization reflected classical considerations of comparative advantage, with each region specializing in those products that best suited its

⁶⁶de Vries (1974)

⁶⁷Drelichman (undated 2007?) The Mesta also represented owners in negotiations with the Crown over taxation.

natural conditions. 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.⁶⁸

However, comparative advantage was also a function of trading costs. The price at the farm gate—the price to which producers responded—reflected not only the price in the destination market but also the cost of getting it there. Since agricultural produce is heavy and bulky relative to value, transportation costs were particularly important. As we saw in Chapter 2, trading costs increased with distance. So distance to market was a major determinant of comparative advantage.⁶⁹

Growing grain for the market made economic sense only in regions that were close (in terms of transportation cost) to urban markets—either within a short distance by land or further away but accessible by water. More distant regions had to specialize in products with higher value relative to bulk or weight. This generally meant livestock and livestock products such as wool and hides. The animals themselves could be walked to market at reasonable cost, and livestock products could bear the cost of overland transportation. So inland areas of Spain, for example, raised sheep and inland areas of Eastern Europe, cattle.⁷⁰

When regions first came into contact with the market, with trading costs still high, they tended to specialize in livestock whatever the local growing conditions.⁷¹ For example, although the Ukraine was later a major exporter of grain, it began its trade with western Europe in the sixteenth century as an exporter of cattle.⁷²

⁶⁸Davis (1973)

⁶⁹This was first noted by von Thünen in 1826. Land closer to urban markets was therefore more valuable and, as we shall see in Chapter 4, 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 Heckscher-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.

⁷⁰Regions in which the open-field system emerged produced both grain for nearby urban markets and livestock for more distant markets Dahlman (1980).

⁷¹Overton (1996)

⁷²Blanchard (1986)

Regions close to urban markets, because of their low trading 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. A notoriously infertile region of England, the Breckland, was prosperous nonetheless because of its ready access to the London market: it made a good living raising barley for the London breweries and rabbits for meat and fur.⁷³

While there was some regional specialization during the earlier phases of commercialization—for example, in the wine regions of Bordeaux and of the Rhine—specialization became much more pronounced in phase three.⁷⁴ Extensive regional specialization had to await the inter-regional trade in bulk goods that developed during the long sixteenth century, especially in the northern zone.⁷⁵ Regional specialization required inter-regional competition, which in turn required trading costs low enough to allow imported bulk goods to be competitive with local production.

Regional specialization had multiplier effects. A region specializing in fruit or vegetables, for example, itself became a market for grain and meat. 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.

Comparative advantage depends on the extent of the market—on who are the others to whom one is being compared. Therefore, as trade expanded, comparative advantage changed. In the earlier phases of commercialization, regions close to urban markets specialized in the production of grain for those markets. But as trading costs fell and the market expanded, the falling price of imported grain made local production unprofitable. Farmers therefore switched to other activities in which proximity to the market still provided a strong advantage—to market gardening, to the fattening of livestock, and to

⁷³Bailey (1989) quoted by Grantham (1999).

⁷⁴de Vries (1974)

⁷⁵See Chapter 2.

the production of fresh dairy products.⁷⁶ Comparative advantage could also change as a result of the *contraction* of trade. For example, during the long fourteenth century the rise in inter-regional trading costs isolated regions from one another economically and led to an increase in sub-regional specialization within each region.⁷⁷

THE REORGANIZATION OF INDUSTRY

Throughout our period Europe was ‘preindustrial’ in that industry accounted for a relatively small part of its economy. Less than ten per cent of the population made its living from manufacturing, mining, and construction.⁷⁸ 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.⁷⁹ During periods of economic and demographic expansion, construction was a major employer—especially residential construction in the growing cities. 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.⁸⁰

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 common secondary occupation for women.⁸¹ 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 by the larger abbeys. Specialized

⁷⁶Hohenberg and Lees (1995), de Vries and van der Woude (1997) Ch 6, Van der Wee (1963)

⁷⁷Epstein (1991) Ch. 3 documents this for Sicily.

⁷⁸Nef (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

⁷⁹Sella (1977)

⁸⁰Nef (1964)

⁸¹Verhulst (2002) Ch. 5

urban artisans produced goods of better quality, mainly for the predatory class: such goods included weapons and tools, leather goods, clothing, and food products.

The initial response of industry to the expansion of trade 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 gynaeceum 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.⁸² Urban production increased too. The new coastal entrepôts, such as Dorstad and Hamwic, became centers of manufacturing as well as of commerce—producing textiles, pottery, and other goods for a growing inter-regional trade.⁸³

In the longer term, however the reorganization of industry took a very different path from that taken by agriculture. During the Commercial Revolution there emerged a completely new form of industrial organization—initially in textiles and later in other manufactures. And it emerged not in the country, but in the cities

The new manufacturing

The reorganization of manufacturing took a different path from that of agriculture, because the technology was different. In manufacturing, unlike agriculture, the timing of the process of production was not dictated by nature. As a result, the different stages could be undertaken continuously and simultaneously. This enabled producers to specialize in a particular stage, with all the attendant gains in productivity. The division of labor could therefore be much finer in manufacturing than in agriculture—not only by product, but also by stage for a given product. This was possible, however, only when total output was sufficiently large to keep all the specialized producers fully employed. 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.

⁸²Verhulst (2002) Ch. 5

⁸³Wickham (2005) Chs. 10 and 11, Campbell (2000) Ch. 8

Output sufficiently large to permit a significant division of labor required a market large enough to absorb that output: as Smith famously noted, the division of labor is limited by the extent of the market.⁸⁴ Since local markets were far too small, the reorganization of manufacturing depended on the expansion of the market through the development of long-distance trade.

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 cloth, for example, separate individual 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.⁸⁵

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.⁸⁶ It was rare for any industrial enterprise to employ more than a dozen workers.⁸⁷ The textile industry of Antwerp was typical: it consisted of some three hundred workshops, each employing four or five men.⁸⁸

The vertical *disintegration* of the process of production 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. Expansion of the scale of the enterprise was problematic. The larger the enterprise, the harder it was for the

⁸⁴This is the title of Chapter 3 of Book I of Smith (1976 [1776]).

⁸⁵Van der Wee (1993) Ch. 11 Industry

⁸⁶Palliser (1983) Ch. 8

⁸⁷Nef (1964)

⁸⁸Van der Wee (1963)

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 an expanding market, it was relatively easy for a journeyman to leave his master and set up on his own.⁸⁹

Larger enterprises were 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.⁹⁰ These large enterprises did not, however, prove economically viable, and they were not emulated.⁹¹ There were also some large-scale, state-owned enterprises such as the tapestry workshops established by the kings of France. But in these profitability was not a concern and in fact few were 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 the organization of agriculture as were the individual enterprises themselves. In industry, and particularly in manufacturing, the dependence on market support was if anything even greater. Moreover, while association played only a minor role in commercial agriculture, in commercial industry its role was major.

Market support for the new manufacturing

The reorganization of manufacturing depended on the extent of the market and so on long-distance trade. But long-distance trade in manufactured goods was problematic. While agricultural commodities were fairly standard, manufactured goods were almost endlessly variable and needed to be matched to consumer taste. For artisans serving a local market this was not a problem. Tailors, for example, could work to order to meet a customer’s specifications. In long distance trade, however, because of the cost and slowness of communications, direct contact between producer and consumer was prohibitively expensive. Instead, merchant intermediaries found the right goods for

⁸⁹Supple (1977)

⁹⁰Kellenbenz (1977) p470

⁹¹Palliser (1983) p 250

consumers and the right markets for producers. If necessary, they had goods modified to suit consumer tastes. Italian merchants, for example, imported unfinished woolen cloth from northwest Europe and had it dyed and finished to suit the tastes of different Mediterranean markets. As demand changed, merchants provided producers with feedback from the market. Long-distance trade was a complicated problem in matching and mediation that depended on merchants for its solution.⁹²

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 purchasers could ascertain their quality by examining them before buying. Manufactured goods, however, were ‘experience goods’: their quality became evident only after they are purchased (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 were not known to one another. If long-distance trade was not to be hampered by a lack of trust, a different mechanism was required.

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. Another solution, as we shall see presently, was for producers to establish a reputation for quality through joint action.

Manufacturing differed from agriculture too in the importance of raw materials. These 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

⁹²Grantham (1999) “The markets of the pre-modern period were not Walrasian auctions, but matching processes operated by merchants...”p 218

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 on the market for their raw materials. Merchants located materials, examined and vouched for their quality, 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.

While the process of 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, compromising the quality of the finished cloth. Here, too, merchants were able to address the problem by acting as trust intermediaries.⁹³ Yarn brokers purchased regularly and in quantity from the same spinners, so the latter had an incentive to maintain quality: the long-term benefits of 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. The division of labor and specialization among manufacturing enterprises would not, therefore, have been possibly without the support of a suitable market infrastructure.

We have seen that the organization of agriculture was partly shaped by the need to finance the large amount of fixed capital that it required. In manufacturing, fixed capital was far less important.⁹⁴ Equipment was simple since, for reasons we shall examine in Chapter 4, there was relatively little mechanization. Most manufacturing took place in the producer's home or in an adjacent workshop. On the other hand, manufacturing did require large amounts of working capital, and the need to finance it shaped the organization of manufacturing much as the need to finance fixed capital shaped the

⁹³Miskimin (1977) Ch. 4

⁹⁴Fixed capital was more important in other industries, such as mining and metallurgy. We will discuss its financing later in the chapter.

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 large amount of working capital was partly a result of the division of labor across enterprises. The input at each stage of production was an intermediate good that embodied all of the value added by earlier stages. Since each stage added only a fraction of the total value, the value of intermediate goods—and so that of working capital—was high relative to the value of output. When the initial raw materials were themselves expensive, the value of working capital was further inflated. In luxury textiles, for example, the cost of the fiber and dyes could approach eighty per cent of the total value of the finished product.⁹⁵

One source of finance of working capital was trade 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.⁹⁶ Miners, similarly, were financed by merchants who purchased their output in advance.⁹⁷

The extension of trade credit, however, exposed the merchant to the risk of default. Consequently, merchants often relied on an alternative method less subject to this risk—a method known to historians as the ‘domestic system’.⁹⁸ Rather than selling the input to the producer on credit, the supplier retained ownership of it and paid the producer a fixed sum for his value added. For example, when extending trade credit a merchant would sell white cloth to a dyer on credit and rely for repayment on the ability of the latter to sell the dyed cloth at a price sufficient to cover his debt. This was risky because of possible fluctuations in the market for dyed cloth. With the domestic system, 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 was born by the merchant,

⁹⁵Munro (1997)

⁹⁶Wadsworth and Mann (1931)

⁹⁷Tawney (1925)

⁹⁸Also as the *Verlagssystem*—translated as ‘putting out’—and as the ‘workshop system’.

who was better able to do so. The domestic system could also be understood 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.⁹⁹ The domestic system was the norm when trade credit would have involved too great a risk of default—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 was not, however, without its own problems. Transactions costs were significant: it was demanding in terms of management, logistics, and record-keeping. Merchants, especially early in the period and in the more backward regions, were not always up to the task.¹⁰⁰ 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 oversight of production.

The role of association

While association played only a minor role in the reorganization of agriculture, its role in the reorganization of industry was significant. Economies of scale in industry and interdependence among producers provided the incentives for joint action. 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.¹⁰¹

The long-distance trade in industrial products involved economies of scale in reputation. 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 their city of origin. Consequently,

⁹⁹The ‘rent’ on this lease is presumably implicit in the rate the merchant pays the dyer.

¹⁰⁰Van 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.

¹⁰¹Craft 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 5.

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.¹⁰² There were, however, two obstacles to establishing and maintaining such a reputation—cheating and counterfeiting. Joint action was instrumental in combating both.

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 cost. Guilds tried to prevent such cheating by policing the quality of their members' output.¹⁰³ To maintain standards, they regulated every aspect of production—materials, equipment, techniques, and the form of the final product.¹⁰⁴ 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.¹⁰⁵ Goods that passed muster were marked with the city seal. Unsealed goods, especially textiles, were viewed with suspicion by foreign purchasers.¹⁰⁶

Counterfeiting was a common problem.¹⁰⁷ Counterfeiters gained an undeserved price premium for their cheap imitations, while undermining the reputation of the city whose products they copied. Counterfeiting was, in addition, an easy way for new producers to enter a market. For example, the Dutch entered the beer market by shipping their brew in recycled Hamburg casks.¹⁰⁸ Municipal seals were one defense against counterfeiting. Another was to make the product difficult to imitate by giving it a conspicuous observable trait—textiles with a distinctive color or weave, for example, or pewter that

¹⁰²Munro (1990)

¹⁰³Munro (1990); Richardson (1999); Epstein (1998)

¹⁰⁴See, for example, Noordegraaf (1997) on the Leiden woolen industry, Mazzaoui (1981) on Italian cottons, and Unger (1989) on German beer.

¹⁰⁵Unger (1989)

¹⁰⁶Munro (2000)

¹⁰⁷Mazzaoui (1981); Nicholas (1992)

¹⁰⁸Unger (1989)

sounded with a particular ring.¹⁰⁹ How to produce the identifying trait had, of course, to be kept a secret. In some cases, guilds and cities sometimes relied on force to suppress counterfeiting—their own force or that of the territorial ruler. For example, cities prohibited, or had prohibited, production of “their” particular good in the country.¹¹⁰

A different reason for joint action was interdependence among producers. The training of apprentices was an important example.¹¹¹ 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.¹¹²

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 the ordinary courts.¹¹³

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. Joint action made sense because of the benefits of group solidarity and because such defense was a public good. The 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

¹⁰⁹Richardson (2008)

¹¹⁰For 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).

¹¹¹Epstein (1998)

¹¹²Regulation 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.)

¹¹³Pirenne (1937), Britnell (1996) Ch. 7

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

Association did, of course, open the possibility of monopolization. And indeed guilds did attempt to increase the profits of their members in this way. To this purpose, they limited competition among their 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.¹¹⁴

Economists and historians have tended to see guilds primarily in this light—as ‘combinations in restraint of trade’. However, recent research has challenged this view and has emphasized the guilds’ many other economic functions.¹¹⁵ In particular, guilds were a necessary part of the organization of the new manufacturing. Without them, transactions costs in the long distance trade in manufactures would have been higher and the trade itself consequently 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.¹¹⁶

In addition to their various economic functions, the guilds also played a social role. They provided a framework for religious, social and charitable activity, especially mutual aid among their members.¹¹⁷ Guild members had a strong sense of corporate identity, and this was reinforced by public display on saints’ days and municipal festivals.¹¹⁸ The social function of the guild reinforced its economic function.¹¹⁹ A member who broke the

¹¹⁴Government-enforced monopolies in industry became important only from the sixteenth century. We will have more to say about them in Chapter 8.

¹¹⁵Among those who have challenged the traditional monopolistic view are Hirshler (1954), Lane (1973), Palliser (1983), Epstein (1998), and Richardson (1999) Richardson (2004).

¹¹⁶Given the product differentiation created by ‘brand names’, this was a case of monopolistic competition. Munro (1990)

¹¹⁷Hunt and Murray (1999), Palliser (1983) Ch. 8,

¹¹⁸Hunt and Murray (1999)

¹¹⁹Richardson (1999), Richardson (2005)

rules faced the loss of the social safety net that the guild provided. In a highly uncertain world, this was indeed a grave sanction.

The rise and fall of guild influence and power coincided with the changing relative importance of product quality. Guild influence grew during the Commercial Revolution when inter-zone trade came to be dominated by fine, if not luxurious, textiles. It began to decline as inter-regional and internal trade in inexpensive manufactures expanded during the long sixteenth century, declining fastest in precisely those regions where the production of inexpensive manufactures was growing most rapidly—England and the Netherlands.¹²⁰

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 one region versus another but country versus city. In the subsistence-tribute economy, as we have seen, most industrial production took place in the country. The organization of the new manufacturing, however, was possible only in the cities.

In the eleventh century the expansion of trade increased the demand for Flemish woolens beyond the capacity of rural and demesne producers to satisfy it. As a result, merchants began to organize production in the cities.¹²¹ 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. It also facilitated joint action through association.¹²² Moreover, only the dense commercial infrastructure of the cities could provide the market support and financing on which the new manufacturing depended.

¹²⁰On 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.

¹²¹Van Werweke (1954), Van der Wee (1993)

¹²²Munro (1998)

As trading costs declined, especially within the two urbanized central regions, 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 produced in Lombardy and used on standardized looms all over the region.¹²³ 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.¹²⁴

The country did, nonetheless, have one important attraction for manufacturing—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.¹²⁵ Country labor was not, however, quite as cheap as rural wages might suggest. Rural workers, because they often worked part-time, were less skilled than urban workers, and it was 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.¹²⁶ Rural workers were therefore less productive than urban workers.¹²⁷ 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 steadily declined as transportation and communications improved and commercial and financial infrastructure spread deeper into the country. Rising urban wages, particularly during the long fourteenth century,

¹²³Mazzaoui (1981)

¹²⁴Vogel (1998)

¹²⁵Not 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.

¹²⁶Munro (1990)

¹²⁷Munro (1998)

increased the attraction of cheap rural labor. And the growing demand for inexpensive manufactures reduced the importance of the lack of skill of rural labor and 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.¹²⁸ Spinning was the classic example. In woolens, spinning accounted for about half of pre-finishing labor costs, and it required relatively little skill.¹²⁹ So as urban wages rose, spinning was the first sub-process to be outsourced to the country.

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. So cheaper labor in the country did not make up for the lack of skills and the greater difficulty of supervision. However, for the mass-market textiles that became increasingly important during the long sixteenth century, cost was more important. In the manufacture of inexpensive woolens, for example, not only spinning but also weaving and fulling might be done in the country with only finishing remaining in the cities. Industries other than textiles followed a similar pattern—early stages of production in the country, finishing in the cities.¹³⁰ There are obvious parallels with the modern phenomenon of ‘offshoring’—the relocation of sub-processes from high-wage to low-wage countries.¹³¹

Another 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

¹²⁸Van der Wee (1993) Ch. 11.

¹²⁹Munro (1998)

¹³⁰Kellenbenz (1977) p 470; Mazzaoui (1981) p 65 et seq.

¹³¹See, 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.¹³²

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.¹³³

In all of these cases, 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, rented 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. The application of the domestic system to rural manufacturing exacerbated the problems of the former—quality control, embezzlement of materials and, above all, the huge commitment of working capital. It was these problems that motivated the next great reorganization of manufacturing in the eighteenth century—the shift to factory production.¹³⁴

As rural textile manufacturing expanded, taking work away from the cities, the cities themselves shifted 'up-market'—both in terms of processes and 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 country (their own and that of England). They also expanded into the weaving of tapestries, the tailoring of

¹³²Mazzaoui (1981)

¹³³Thirsk (1978), Palliser (1983) Ch. 8

¹³⁴de Vries (1976), Szostak (1991)

finished clothes, and the manufacture of fashion accessories such as hats, gloves, purses, and jewelry.¹³⁵ 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 urban labor.¹³⁶

While the new manufacturing was of enormous qualitative significance for the path of economic development, it was quantitatively small. The famous woolen industry of renaissance Florence employed no more than 30,000 workers; in 1400, the English textile industry employed perhaps half that number. Well beyond the end of our period, peasant households continued to produce textiles and other goods for their own use and for local trade. Urban artisans continued to sell directly to their local customers.¹³⁷ And governments continued to produce goods in command enterprises—particularly armaments and luxury goods for the court. By the seventeenth century, the reorganization of industry—like that of agriculture—was far from complete.

CONCLUSION

The reorganization of agriculture and of industry were part of a more general reorganization of social production that encompassed both. We have seen that 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 casual rural labor. But the reorganization of agriculture also helped to make possible the growth of industry and of 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.¹³⁸ The consequent shift of population from agriculture to industry and from the country to the cities was itself a part of the macro-reorganization of social production.

¹³⁵Stabel (1997); Nicholas (1992)

¹³⁶Van der Wee (1993)

¹³⁷“Even as late as 1841 over 40% of industrial craftsmen were supplying exclusively local markets: before 1750 the proportion must have been a good deal higher” Clarkson (1971) p 117.

¹³⁸And into new lands opened up by colonization and reclamation.

Commerce played a central role in the reorganization of production. Commerce was of course necessary, as we saw in Chapter 2, for the market expansion that created the incentives for reorganization. But it was also integral to the new organization that emerged. As we have seen, the agents of commerce, merchants and cities, were responsible for marketing output, for procuring inputs, and for coordinating the production of specialized producers. Commerce was the connective tissue of the organization of production.

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