

Preprint

The Irish, Scottish and Flemish Linen Industries During
the Long Eighteenth Century

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Introduction

Jean Quataert has described how, in central Europe during the pre-industrial era, linen manufacturing was popularly thought to be a dishonourable profession.(1) The industry has had a similarly poor reputation amongst some historians of the transition to industrial capitalism. Francois Crouzet described linen as 'an archaic industry, doomed anyway.'(2) Denis O'Hearn has recently argued that the Irish linen industry was intrinsically 'semiperipheral,' insofar as it was characterized by low wages, slow rates of change in technology and productive organization, and few linkages to other economic sectors. During the nineteenth century, 'the existing level of linen output was simply concentrated from an Ulster-wide industry to the Lagan valley.'(3) Elsewhere, linen has enjoyed a better reputation. In the Scottish historiography, according to Devine, the linen industry has been regarded as 'the source of enterprise, capital and labour for cotton, the 'leading sector,' which ushered in the age of industrialisation and future prosperity.'(4). Mixed claims have been made for the Flemish linen industry. Whereas Mokyr and Mendels argued (in different ways), that linen paved the way for Belgium's relatively early industrial transition, Vandenbroeke and Van Der Wee depicted linen as a source of delay and irregularity in the process.(5)

This chapter explores the problem of regional differentiation in linen-manufacturing regions during the

era of proto-industrialization and the transition to modern capitalist industry, focussing on the Irish, Scottish and Flemish cases. It critically reviews a number of existing explanations for regional differentiation and suggest an alternative. In the Germanic lands, linen's 'fateful association with the household' - and with women's work - led to its poor reputation. I suggest that it was differences in how men's and women's labour was mobilized in the production of linen (from the cultivation of flax to the manufacture of woven cloth) which contributed to regional differentiation in the development of linen producing regions, and thereby led to differences in the transition to capitalism.(6)

Linen and abundant labour in the transition to the factory

Probably the most immediate reason for linen's mixed reputation amongst historians of the transition to capitalism is its association with poverty.(7) Mokyr has observed that '[t]here are two competing and apparently incompatible views of the role of labour in the Industrial Revolution.'(8) According to one view, technological innovation is more likely to occur where labour costs are high. An abundance of cheap labour acts as a disincentive to capital investment and technological change. Thus according to Vandenbroeke, lower wage costs delayed the industrial take-off in Flanders relative to England.(9) O'Hearn argued that, 'because [Ireland's]

wages were low, it was rational to compete by "adaptive response" (extending the use of labour and intensifying its exploitation) rather than by introducing new technologies, labour relations, and forms of productive organization.' (10) I have argued elsewhere that a shortfall of female labour at the end of the 18th century provided part of the impetus towards the earlier replacement of hand-spun by machine-spun yarn in Scotland compared with Ireland (11).

According to the second view, industrialization should occur faster and earlier in low wage economies. Thus Mokyr argued that the linen industry in Flanders generated a pool of low-wage labour that provided the technologically innovative cotton industry with a 'quasi-rent,' facilitating continuous reinvestment in the modern industrial sector, during the 'growing up' period when traditional, or proto-industrial manufacturing coexisted with modernizing industry (12). Ireland represents a problem case for this model, since despite the existence of a substantial traditional sector based on linen manufacturing, and wages that were amongst the lowest in Europe, the process of industrialization there was confined to a small enclave, 'atypical of the rest of the economy.' In Ireland, the modernization of the linen industry was facilitated by the transfer of capital from a declining cotton industry, whereas in Belgium this process took the form of capital flows from one modernizing industry to another. When profits fell in the cotton industry, retained earnings were invested in

linen, but this did not lead to the demise of cotton manufacturing.(13) In Scotland, the coexistence of modernizing cotton and linen industries took the form of regional specialization. The fine linen industry in the west of the country was rapidly displaced by cotton at the end of the 18th century. Cotton spinning mills were also established in the eastern districts which specialized in the production of coarse linens, but they seem to have disappeared as the number of flax spinning mills multiplied. Of the three regional linen industries, Scotland's was the first to undergo mechanization. As early as 1815, spinning mills accounted for half the yarn produced in Scotland. Similar developments did not occur in Ireland and Flanders until the late 1830s.(14)

Mokyr proposed two explanations for the apparently contradictory Irish case. First, he noted that Ireland was the only country in Europe to experience large-scale out-migration in the first half of the nineteenth century, and that the province of Ulster (where the linen industry was concentrated), was overrepresented in the emigrant flow. Thus, 'Ireland industrialized, but unfortunately for the Irish, its industrialization took place outside its borders: in northwest England, the Scottish Lowlands, and New England.'(15) Second, Irish workers were 'inherently' less productive, and therefore expensive in real terms. Under these circumstances cheap, but inefficient Irish labour led to the failure of

the Belfast cotton industry, and sent the 'wrong signal' to specialize in the linen industry.(16)

The debates surrounding the collapse of the cotton industry in Ireland are outside the scope of this chapter.(17). It focuses, instead, on three questions. First, why did the development of the linen industry before the factory lead (apparently) to an abundance of cheap labour in Ireland and Flanders, but not in Scotland? Second, what were the dimensions of 'inefficiency' in Irish labour, such that its abundance eventually proved an obstacle to sustained industrialization, in contrast to the Flemish case? Third, why was Scotland the first of the three regions to begin the process of industrialization, despite apparent labour shortages? I begin by considering the applicability of the demo-economic model of proto-industrialization to the three cases under review. I continue by examining the evidence for low wages, and for the putative link between wages and productivity in each of the regional linen industries.

Linen, proto-industrialization and population growth

The principal hypotheses linking rural industrialization before the factory to population growth and the development of surplus labour fall under the heading of 'proto-industrialization theory.' As Ogilvie and Cerman have recently emphasized, there are really a number of theories of proto-industrialization, which overlap and sometimes contradict one another in complex

ways. However, most interpretations posit a connection between the expansion of inter-regional and overseas markets for manufactured goods, the penetration of domestic industry into the countryside, and population growth. (18)

Table 1 gives an indication of linen exports from Flanders, Ireland and Scotland during the 18th and early 19th centuries. It can be observed that the Flemish industry was much more developed at the beginning of the 18th century than either of the other two. Flanders had a lengthy history of exporting linens, dating from the 14th century. Despite being a 'European battlefield,' urban production of linen cloth increased in Flanders during the 17th century. In the 18th century, the growth of industrial production took the form of 'ruralization,' as urban manufacturing stagnated. Spain and the Spanish colonies had constituted the most important market for Flemish linens since the 16th century. Flanders manufactured both fine and coarse linens for the Spanish market, but from the end of the 17th century onwards there appears to have been a decline in the production of finer linens, and an increasing specialization in the coarser varieties destined for use as clothing for slaves (brabantes), and for packaging (presillas). (19)

According to Mendels, 'Flanders had a significant place in the world market but it could not affect the price on most markets.' (20) In the 1690s, England introduced protective measures which led to a decline in linen imports from mainland Europe, including Flanders,

and which formed the beginning of a series of measures that fostered the growth of linen manufacturing in Ireland and Scotland. During the first half of the 18th century, Irish and Scottish linens increasingly substituted for European imports on the English market. At mid-century a scheme of bounties was introduced to promote the export of Irish and Scottish linens to the American colonies. While the bounties affected both industries, they probably had greater consequences for that of Scotland. Between the 1760s and the 1790s, the colonial market accounted for a greater share of the linen exports of both countries. During this period Scotland increasingly specialized in producing the coarse linens supported by the bounty scheme, and in exporting them to the West Indies, where they were used to clothe slaves. The growth in colonial demand contributed to an increase in the production of coarser, 'plain linens' in Ireland for the North American market. However, Ireland never produced (on any scale) linens as coarse as the Osnaburgs manufactured in east Scotland. Irish and Flemish linens were more similar in degree of fineness.(21)

Table 1 suggests that the Irish and Scottish linen industries began to outstrip that of Flanders in the second half of the 18th century. During the decisive 'growing up' period between 1780 and 1815, when mechanized cotton spinning (but not flax spinning) was introduced in each case, Irish and Scottish linen output more than doubled, while that of Flanders appears to have

grown by less than a third. However, given events at the time, it was remarkable that the Flemish industry continued to grow. Spain began to restrict access to her markets, which were completely closed off during the continental and maritime blockades of the 1790s. France occupied Flanders between 1795 and 1814. However, while these events had negative short-term effects, in the longer term access to French markets saved the Flemish linen industry. Exports of linen cloth accounted for a third of total industrial exports from the Southern Netherlands until 1840.(22)

How might growing world demand have affected demographic trends in linen manufacturing regions? On the basis of evidence from the Flemish case, Mendels argued that population pressure meant that rural households were unable to produce enough food to meet their consumption needs, leading them to devote previously idle time to the manufacture of linens. The income from manufacturing was used to purchase food in the marketplace. Mendels hypothesized that Flemish peasant households were subsistence-oriented, with a high preference for leisure. This meant that when the terms of trade shifted in favour of linens, they withdrew labour from manufacturing because they were able to meet their consumption target with less effort. It also meant that they used surplus earnings to enter into marriages which they must otherwise have postponed. The income from proto-industry thus led to earlier marriage, and consequently, population growth. Mendels further argued

that a decline in the terms of trade did not lead to a corresponding increase in the age at marriage, partly because of the 'low education and narrow horizon' of the population, and partly because they were already close to a social, psychological and biological 'upper bound.' (23) Thus proto-industrialization was a cumulative process. Population pressure led to linen manufacturing, which led to population growth, sustained population pressure, and continued rural industrialization.

Building in part on Mendels' ideas, Hans Medick argued that the demographic behaviour of rural industrial households could be understood in terms of a distinct proto-industrial family economy, which differed in its structures and functions from those of peasant and proletarian households. (24) In the sophisticated formulation of Medick and his colleagues, proto-industrialization was a 'demo-economic system,' in which macro-level social, economic and demographic processes were linked to the micro-level family strategies of household producers. (25)

Kriedte, Medick and Schlumbohm have acknowledged that the demographic predictions of the proto-industrial model have not generally been borne out. (26) Empirical research has shown that a cumulative pattern of earlier marriage and population growth was far from universal. Recently Vandenbroeke has argued that in Flanders, while 'proto-industry and population growth are unmistakably positively correlated...the explanation underlying this is not the one proposed in Mendels' model.' (27) Between

about 1700 and the middle of the 19th century, continuous declines in marriage and birth rates, and an increase in permanent celibacy, indicate that the growth of linen manufacturing in the countryside was in fact accompanied by the development of a more restrictive marriage pattern. The linen manufacturing districts experienced dramatic population increase in the first sixty years of the 18th century, but by the later decades there was a clear slow-down. In 1796, participation in proto-industry by region appears to have been negatively correlated with nuptiality and fertility. For Vandenbroeke .(28)

Vandenbroeke attributed population growth in the proto-industrial districts to the absence of push factors which would otherwise have compelled migration to urban centres, and to a decline in infant mortality. In an earlier critique, Mokyr argued that Mendels' theory of the relationship between rural industrialization and family formation was not necessary to explain population growth in Flanders. Whereas Mendels insisted that 'the peasants did not take up rural industry as an alternative to marginally less rewarding work in agriculture,' for Mokyr, proto-industrialization represented a solution to the 'Malthusian trap,' in the context of relatively low agricultural productivity, albeit at the expense of a low standard of living.(29)

Unfortunately, the demographic components of proto-industrialization theory have not yet been adequately tested in the Irish case. It is clear that the linen-

manufacturing districts in the north of the country had exceptionally high population densities by the middle of the 19th century. Evidence compiled by Dickson, O'Grada and Daultrey suggests that Ulster experienced the most rapid population growth in Ireland between 1753 and 1791. Between 1791 and 1821 the most rapid growth occurred in Connacht. This pattern is consistent with the spread of the linen industry from its core in the Lagan valley, to incorporate outlying districts like County Mayo towards the end of the 18th century. However, as Clarkson pointed out, given that population also grew in areas where the linen industry was not widespread, additional factors must have been influential.(30)

There is some evidence that the linen industry may have been associated with higher rates of nuptiality. Morgan and Macafee found that weaving was associated with earlier marriage, most notably for males, in County Antrim. But as Kriedte, Medick and Schlumbohm note, earlier marriage for females is what counts in terms of population increase.(31) In a cross-sectional analysis of evidence from the 1841 census, Almquist found that hand-spinning was associated with higher levels of young female nuptiality, and with high proportions of children in the population. However, by 1841 the Irish linen industry had clearly entered the 'growing-up' stage, when household based production coexisted with the factory system, so whether or not Almquist's analysis represents an adequate test of proto-industrialization hypotheses remains an open question.(32)

If proto-industrialization hypotheses concerning population growth have been problematized in the Flemish and Irish cases, they appear to have little application to the Scottish case. Table 2 gives an indication of population change in each case during the 'long' eighteenth century. Whereas population grew by over 60% in Flanders, and by more than 100% in Ireland, in Scotland population increased by just 30%. Ireland's annual rate of population growth was more than double that of Scotland in the second half of the century.(33). Whyte observed that while there is some evidence in the Old Statistical Account of the 1790s for population growth in proto-industrial parishes, this could be explained by internal population shifts. Moreover, the rate of population growth was also above average for rural districts in those parishes where new agricultural technologies were being introduced.(34)

Clearly, as Tyson has shown, Scotland's demographic regime differed fundamentally from that of Ireland. A decline in infant mortality seems the most likely explanation for Scotland's relatively modest population increase during the 18th century. In Ireland, by contrast, current scholarship indicates that very high rates of marital fertility account for rapid population growth. Schellekens suggested that potato cultivation entailed an increased demand for female labour, which in turn led to narrower birth intervals because women spent less time breast-feeding each child (35). Potato cultivation was often associated with flax cultivation

and with spinning in Ireland. Paradoxically, Vandenbroeke showed that the opposite demographic pattern was true in the Flemish proto-industrial districts at the end of the 18th century. There, both fertility and infant mortality were lower than in agricultural districts. Vandenbroeke attributed this to '[a] high degree of domestic industry [which] implies home labour, and a long lactation process.' The paradox may be explained by the fact that Flemish women devoted less labour to flax cultivation, as I discuss in more detail later.(36)

It is clear that the original proto-industrialization hypotheses cannot be applied unproblematically to any of the three cases. In a recent contribution, Pfister argued that the stage models of growth implicit in most accounts of proto-industrialization should be replaced by an analytical model designed to explain variation. He pointed out that a long-term increase in the proto-industrial labour force could occur either through geographical extension or through an increase in the application of labour to manufacturing within a given area. The latter could occur either through population growth, or through a sustained increase in the share of labour devoted to market activity. The path followed by a given proto-industrial region depended on "the relationship among factor productivity in the proto-industrial and subsistence sectors on the level of individual households." The overall growth rate of a proto-

industrial economy depended on the growth rate of the labour force, the growth rate of the capital stock, and changes in the relative prices of exported and imported goods. (37)

Geographical expansion was likely to be the dominant growth pattern where the productivity of labour in proto-industrial activities was not much greater than the productivity of labour in subsistence agriculture. Because the opportunity costs of abandoning subsistence production were relatively high, proto-industrial growth depended, under these circumstances, on the presence of structural unemployment (usually of women and children). Pfister argued that these kinds of proto-industries did not alter household dynamics fundamentally, and thus were not accompanied by population growth. By contrast, where the productivity of labour in proto-industrial activities was significantly higher than in subsistence agriculture, the rent derived from market activity exceeded the opportunity costs of forfeiting subsistence income. Where this was the case proto-industrial growth did not depend on the existence of structural unemployment, and might lead to population growth due to the factors originally identified by Mendels and elaborated by Medick.

Pfister's argument is of interest insofar as it links variation in proto-industrialization to differences in the productivity of labour in rural industries. In doing so it implicitly rejects the thesis that proto-industrial growth depended on a distinct set of

orientations towards work and leisure within the family economy of rural producers. Pfister does note that proto-industrial diversity was gendered - that is, that low productivity manufacturing activities were confined to women and children. The assumption here is that women and children were underemployed and that they occupied themselves with such poorly remunerated tasks because they had nothing better to do. In the next section I review some evidence regarding wages, skill and productivity in the Irish, Scottish and Flemish cases. I argue that women's availability for low productivity tasks was at least partly due to the fact that their labour within the family economy was defined and evaluated differently from that of men.

Low Wages, Skill and Productivity

Economic historians agree that, in comparison with their neighbours in England and the northern Netherlands, wages in Ireland, Scotland and Flanders were low. However, there are some indications of variation amongst the three cases in terms of changes in wage levels during the 18th century, and in terms of the gap in wages between skilled and unskilled labour. It must be emphasized that, especially in the Irish case, data on prices and wages remain scanty.

Gibson and Smout have presented evidence that, in Scotland, wages were characterized by a long period of near-stagnation from the middle of the 17th through the middle of the 18th centuries. After about 1760 wages

increased faster than living costs. Evidence from the Old Statistical Account of the 1790s 'places central Scotland among a rather small number of areas in Europe where the living standards of the common people were improving in the second half of the eighteenth century.' (38) Kennedy and Dowling have recently published data for Ireland showing that wages remained 'sticky' from 1700 to around 1760, and from 1820 through the Famine years of the mid-1840s. Both wages and prices were characterized by marked inflation during the wars with France. (39)

Unfortunately, the quality of the Irish data do not permit any confident estimate of changes in the standard of living during this period. O'Grada concluded that '[t]he most plausible inference to be drawn from Irish wage data between the 1780s and the early 1810s is a rise in nominal wages that just about kept pace with rising prices.' (40) In Flanders, according to Vandenbroeke, the middle of the 18th century was a 'golden age' of rising real incomes for both linen weavers and agricultural labourers. Because of lower food prices and taxes, Flemish nominal wages remained low. At the end of the century, unskilled or semi-skilled labourers in Flanders earned 60 to 70% of the wages of their English counterparts. Nonetheless, Vandenbroeke's data show that both weavers and agricultural labourers experienced downward pressure on their incomes in the final quarter of the 18th century. (41)

According to Cullen, Gibson and Smout, the differential in earnings between skilled and unskilled workers may be taken as an indication of the level of development of a given region. As a region develops, skilled labour becomes more plentiful, and unskilled labour becomes more productive, and the gap in pay between the two categories narrows. They calculated that while Scottish craft-workers (carpenters and masons), earned less than their Irish counterparts during the 18th century, agricultural labourers' wages were higher. That is, the wage-gap between skilled and unskilled labour was markedly smaller in Scotland. Kennedy and Dowling's evidence suggests that in Ireland the gap increased even further at the end of the 18th and in the early 19th centuries. In Flanders, the 'skill premium' appears to have been high relative to Holland (although it was almost certainly lower than that of Ireland). Lis and Soly cite evidence that the nominal wages of skilled workers in Flanders were not much lower than those of their counterparts in Holland. In Ghent, unskilled workers earned 60 per cent of journeyman's wages, compared to 70 per cent in Holland.(35)

Lis and Soly have claimed that the southern Netherlands' relatively high skill premium contradicts the argument that low wages led to an early industrial transition in Belgium. They asserted that skilled labour was what the textile manufacturing sector required, so that the southern Netherlands did not have any advantage over the north in this respect. They

further contended that, apart from a period between the 1660s and 1725, urban textile manufacturing grew as rapidly as rural production in Flanders (and in Brabant, where the woollen industry predominated), and that the wage difference between urban and rural areas was very small in any case. Thus, for these authors, labour costs have no bearing at all on the industrial transition.(43)

Should these arguments be extended to the Irish and Scottish cases? Two points can be made. First, the evidence from all three cases suggests that linen weavers' wages were lower than those of other skilled craftsmen, although the gap was narrow in Scotland, where the overall skill premium was low. Thus cheap labour costs may have contributed to the industrial transformation in linen weaving districts, despite high skill premiums. In Flanders, weavers' earnings (at least in the rural districts) appear to have been no greater than those of unskilled workers, if not actually lower.(44) According to Young, Irish weavers earned an average of 1s 5d per day for fine linen, and 1s 1/2d per day for coarse linen, compared to an average of 1s 9d per day for carpenters and masons in the 1770s.(45) Moreover, there is some evidence that linen weavers' wages did not grow as rapidly as those of other workers during the period of high inflation associated with the French wars. When Young visited Armagh in the 1770s, he was informed that weavers earned between 10d and 1s 4d a day. Thirty years later Coote reported that weavers in Armagh earned

1s a day, on average, though they could earn up to 2s 6d when trade was brisk.(46)

While data on Scottish weavers' wages are sparse, Warden's extracts from the Old Statistical Account suggest a range from 10d to 1s 4d per day in the 1790s, compared to an average of 1s 4d for carpenters, and 1s 6d for masons.(47) Thus Irish weavers earned about 66 per cent of the wages of other craftsmen, whereas Scottish weavers earned about 80 per cent. In contrast to Scottish weavers, who enjoyed a period of unprecedented prosperity in the last quarter of the 18th century, Irish weavers' wages appear to have stagnated. There was a dramatic increase in the output of Irish linen during this period, despite competition for labour from the cotton industry. The most likely explanation for this is that the increase in demand for coarser linens made it possible to draw men into the weaving business with less training. The contention is supported by evidence that outlying linen markets accounted for a greater share of the growth in output than those of the core 'linen triangle' during this period.(48) In Flanders, weavers' real wages declined in the latter decades of the 18th century.

The second point is that, in all three cases, men represented a minority of workers in the linen industry. Because of the technological bottleneck between spinning and weaving, men were outnumbered by women by a factor of at least four to one. In both Ireland and Scotland, women's daily earnings in spinning were as low, if not

lower, than those in unskilled agricultural labour, although this must be set against the highly seasonal nature of day-work for women. In Ireland, Arthur Young's data indicate that, in the linen districts, women earned from 2 1/2d, to 6d (on average about 4d) a day in spinning, and about 6d a day pulling flax in 1776. In Scotland, evidence from the Old Statistical Account suggests that the earnings of female day-labourers ranged from 3d to 14d, while those of spinners averaged between 3d and 15d (rarely more than 8d) a day in the 1790s.(49) Thus evidence relating to men's wages in weaving gives a distorted picture of the cost of labour in the linen-manufacturing sector during proto-industrialization.

What of rates of productivity within linen manufacturing? There is little evidence of technological change in either of the two main phases of the production process - spinning and weaving - in any of the three cases during the 18th century. The flying shuttle, which was invented in 1733, and which halved the time required to weave a piece, was not introduced to the Irish and Scottish linen industries until the end of the 18th century, and was not widely diffused until the 19th century. It was not introduced to Belgium until the 1820s and 1830s.(50) Contemporary commentators have left estimates of the average number of yards woven per day in each case, but meaningful comparison is made difficult by variation in the quality and widths of the linen cloth. According to Young's estimates, Irish weavers manufactured between 2 and 3 yards of linen a day,

depending on the fineness of the cloth. Flemish weavers wove 5 ells, or about 4 yards per day. Osnaburg weavers in Scotland wove between 6 and 8 yards of this coarse variety of linen per day.(51)

In Scotland, a two-handed spinning-wheel was introduced in the 1750s, although it is unclear how widely or how quickly it diffused. Use of the two-handed wheel was recorded in various parishes in the Old Statistical Account in the 1790s. While it appeared to double the output of yarn from an individual spinner, the two-handed wheel was efficient only in the production of coarse yarn, and required a considerable amount of dexterity to use.(52)

It is almost impossible to evaluate the productivity of spinners in the three cases, because the sources rarely give enough information about the quality of yarn being produced to ensure that the examples are comparable. Consideration of spinners' productivity is further complicated by the fact that contemporaries assumed it to be a task embedded in women's everyday household duties, not one pursued consistently throughout the day. Wakefield described spinning as an activity filling up 'small intervals of time...that would otherwise be lost.' From County Fermanagh, Young reported that 'a woman will earn 4d a day by spinning, and do something in the family besides,' and that spinning servants were contracted to 'do the business of the house and spin a hank a day.'(53)

For most women, household activities, including spinning, occurred in the context of a marriage bargain, rather than a wage contract. Observing that women's and children's small earnings probably accounted for much of the increase in standard of living in Scotland at the end of the 18th century, Gibson and Smout stated that '[i]f the women's [incomes] look like gender exploitation from one angle, they look from another like an increase in total family income of 30 to 45 per cent.' (54) The statement illustrates dramatically how women's labour has been constructed differently from that of men. Because spinning was not separated from the daily round of household tasks, and because the earnings from spinning were not disaggregated from total family income, the 'value' of women's work - and indeed of their leisure - could not be calculated.

The proto-industrialization theorists attributed growth to the interplay between market and subsistence sectors, mediated by household processes. Rural industrial production depended on some access to the material means of survival - especially land - but it also depended on access to 'underemployed' labour within the household. The gendered construction of work in rural households meant that women's labour, in particular, was expandable. It was precisely the unremunerated labour of women and children that made it cheaper (from the merchant's perspective) to have goods produced in rural small-farm households, rather than in urban manufactures, irrespective of nominal wages. (55)

Mendels illustrated this for Flanders by showing that an 'ideal,' self-contained linen-manufacturing household, where there were four adult women to spin, and one adult man to weave, and which purchased flax in the market-place, could earn less than the wages of two unskilled workers, assuming they could produce about 5 ells, or about 3 ½ yards of linen cloth a day.(56) A similar calculation can be made for Ireland, using data collected by Arthur Young in County Armagh (see Table 3). He was informed that about one and half stones of flax were required to produce a piece of cloth 25 yards in length. This quantity sold for 10s 6d (126 pence) in the marketplace, while the finished piece of cloth sold for 11d a yard, or £1 2s 11d (275 pence). Deducting the price of the flax, this meant that a weaving household earned approximately 6d a yard, or 18d a day, assuming three yards could be woven in a day. By this calculation, then, an Irish weaving household of five adults could collectively earn as much as two unskilled male labourers.(57)

Mendels attributed the willingness of the members of weaving households to work for such poor remuneration to a lack of alternatives. Thus their labour had little opportunity cost. But if this was the case in Ireland, why did it cost more to employ spinners and weavers than to purchase linen cloth from a weaving household in the marketplace? When Peter Besnard claimed this as a witness before a British Parliamentary Committee in 1825, he was ridiculed by the Commissioners whose knowledge of

the theory of political economy told them it could not be true.(58) Yet the point can be empirically demonstrated, again using Arthur Young's data. Table 3 shows that a small manufacturer who purchased flax in the marketplace, put it out to spinners, and then put the yarn out to weavers would make a loss - or a very small profit if the cost of spinning was at the low end of the range provided by Young - even with the omission of ancillary costs.

When the processes of spinning and weaving are disaggregated, it can be further demonstrated that the profitability of manufacturing linen cloth depended on the price of spinning. A manufacturer who purchased yarn in the marketplace, and put it out to weavers, could make a profit on the web, provided the price of yarn did not exceed 7d a hank. However, a manufacturer who purchased flax in the marketplace, and put it out to spinners, could not make a profit on the yarn unless it sold for more than 7d a hank. As Besnard argued to the Commissioners, this phenomenon, rather than 'over-regulation' on the part of the Linen Board, accounted for the absence of putting-out in the Irish spinning sector.

Unfortunately, Young does not give us a market price for yarn at Armagh, but he does tell us that yarn of the same quality - 2 and a half hanks to the pound of heckled flax - was sold to jobbers in Sligo at 5d a hank. Similar yarn sold for 7d a hank at Inishowen, in County Donegal, and at Westport, in County Mayo, although in both places, Young was informed that this was an unusually high price. Much finer yarn (6 or more hanks

to the pound) was sold for 10d a hank near Randalstown, 9d a hank at Hillsborough, and 8d a hank at Warrenstown [Waringstown]. It is important not to make too much of these figures. However, together with evidence from other sources, they remind us that the gendered interaction between market and subsistence sectors was at the centre of proto-industrial development. There were important differences in the form taken by this relationship in Flanders, Ireland and Scotland.

Household and Market: Different Relationships

Mager has recently argued that it is no coincidence that the classic studies of proto-industrialization focussed on linen manufacturing regions. Because flax grows well in temperate climates and its cultivation in the 18th century was labour intensive, the linen industry favoured production under the 'Kaufsystem,' whereby cottage producers secured their own raw materials and completed the whole process of making the cloth before selling it to merchants in the marketplace. Linen was therefore more constrained by the 'laws' of the family economy than other textiles, including cotton and some woollens, which favoured production under the 'Verlagsystem' or putting-out system. For Mager, reliance on the 'extreme case' of linen is a serious flaw in the proto-industrialization thesis. In their response, Kriedte, Medick and Schlumbohm argued that Mager focused excessively on the technical aspects of

production, rather than on the social relationships which were at the heart of their original thesis.(59)

Both arguments are partly correct. It is true that the properties of flax created the potential for linen-manufacturing to grow in regions populated by poor small-holders with only tangential links to the market-place. As Almquist pointed out, flax is similar to rice (and potatoes), insofar as yields increase in proportion to the amount of labour devoted to its cultivation during the growing season. On the other hand, as I discuss below, the social relations of production are not simply given by the nature of the crop.(60)

In a pamphlet published in 1705, the French Huguenot Louis Crommelin pleaded his case that Irish women should apply themselves to spinning and abandon the business of raising and dressing flax, on the grounds that they 'are and forever will be' ignorant of the correct procedures. In other countries, he wrote, flax was raised and prepared by 'Men of Good Stocks,' who sold it to spinners in the marketplace.(61) Twenty years later, Lionel Slator, an English flax-dresser employed by Thomas Coote, was equally vehement in denouncing the tendency for scutching and hackling to be carried out by women in Ireland:

If there be such Differences in swingling and hackling, [as] between Artist and Artist, what must this Nation loose, by the barbarous Methods followed by the House-Wives? who have neither Tools, nor Skill to use them if they had them.(62)

In a response to Slator, Richard Hall, an expert flax-dresser employed by the Linen Board, pointed out that in

the Netherlands, hackling (but not scutching) was carried out by women:

I see no Reason why the Women here [Ireland] might not be instructed to hackle as well as the Men; the Labour is not so great but that the Women might undergo it. As to the breaking, swingling, or scutching, that I must acknowledge to be labourious. (63)

These comments demonstrate the extent to which the gender division of labour was implicated in the social construction of skill in the 18th century. For Crommelin and Slator, improving the Irish linen industry required that women be excluded from activities involving the exercise of skill. It is also noteworthy that Hall claimed women could be trained to hackle flax on the grounds that the task was not laborious, not on the grounds that women could be as skilled as men.

The comments also highlight a distinctive feature of the Irish linen industry: namely, that the cultivation and preparation of flax, through to the manufacturing process of spinning, was carried out on small, subsistence-oriented holdings, by 'housewives,' together with their daughters and servants. By the time of Arthur Young's visit in the 1770s, scutching mills, and to a lesser extent, specialist male flax-dressers, had begun to displace women from some stages of the process. Nonetheless, flax was still grown in very small quantities - a 'peck's sowing,' or about half a rood, an eighth of an acre. Even where scutch-mills were used, women were often still responsible for the preparatory stage of breaking, or beetling the flax. Outside the

linen triangle scutch-mills were less widespread, and women almost certainly continued to scutch flax by hand, as Young was informed in County Fermanagh. Near Randalstown, Young reported that hackling was done by itinerant 'flax dressers who go about.' (64)

However, a pamphlet published in Carlow in 1778, claimed that 'housewives' had been "allured" by the specious promises of flax dressers, and that:

The Spinners and Weavers of the North East Part of Ulster, viz. the Counties of Armagh, Antrim, and Down, are better skilled in the Linen Manufacture than those of any other Part of Ireland, and Women Dress their Flax; except some Poor Families, who dwell in Towns, have no Lands of their own to cultivate Flax, and are, therefore, obliged to buy it in Shops.(65)

The authors were not disinterested in their condemnation of flax dressers, since they were claiming compensation from the Linen Board for the invention of a machine for dressing flax! Nonetheless, it is unlikely that either scutch-mills or itinerant male flax-dressers had displaced women entirely from the processes of preparing flax for the wheel by the end of the 18th century. In 1796, when the Linen Board offered spinning-wheels as premiums for sowing flax, over 90% of all claims were for sowing just one rood, or a quarter of an acre. Such small quantities were unlikely to warrant the employment of machinery or specialist flax-dressers. As late as 1834, the Ordnance Survey Memoir for Enniskillen, in County Fermanagh, reported that amongst 'the lower class of farmers and peasantry,' scutching was carried out by

groups of local women who proceeded 'from house to house until all be finished.' (66)

In the 18th century flax was an extremely labour-intensive crop. In Flanders, according to Mendels, cultivation of a French acre of flax required 2 and a half 'man days' and 80 'woman days.' Arthur Young's estimates of the expense of an acre of flax give a minimum requirement of 6 man days and 42 woman days, and a maximum requirement of 34 man days and 108 woman days in Ireland. The estimates exclude scutching and heckling, but those at the high end of the range include beetling - the preparatory stage to scutching. The estimates were largely hypothetical, as few households grew as much as an acre of flax. (67)

In 18th century Ireland, then, the most labour-intensive phases of the linen industry, from cultivating and processing the raw material, to spinning the yarn, were carried out by women on small, subsistence-oriented farms. In the second half of the century, a division of labour began to emerge between spinning and weaving districts, as petty-manufacturers in the linen triangle began to purchase yarn in the marketplace and put it out to cottier-weavers. However, as exports of linen cloth surged towards the end of the century, the problem of meeting the proportionately huge increase in demand for labour in the early phases of the production process was met by the geographical expansion of the industry to incorporate ever more remote and marginal rural districts. Sustained high population growth in the

context of continued access to land for subsistence production ensured an almost limitless supply of cheap labour to the industry. Thus Irish merchants were able to increase their exports of linen cloth without any major alteration to the household-based production system.

The problem was solved differently in Flanders and Scotland. The development of the Flemish industry in the 18th century was accompanied by a different pattern of regional specialization. The 'ruralization' of the industry as urban manufacturing declined has already been noted. After the middle of the century, manufacturing activities declined in the south-eastern rural districts, becoming increasingly concentrated in a central zone stretching to the south of Ghent. The north-eastern districts cultivated flax on a commercial scale for export both to the central manufacturing zone and overseas. In Mendels' words, '[we] are thus speaking of a specialization; northeast Flanders produced the flax, and the rest of the interior produced the linen.' (68) Flemish spinning and weaving households cultivated some flax, but they were dependent on the marketplace for most of their raw material. Moreover, according to Mendels, fully half of the proto-industrial population was landless by the second half of the 18th century. Population increase and increasing landlessness ensured that increasing amounts of labour were applied to spinning and weaving within the manufacturing zone. From the merchant's perspective costs were kept low because weaving households purchased the raw materials in the

marketplace, and because the cost of women's labour in spinning was not calculated separately when the web was sold.

In Scotland the problem of increasing productivity in the early phases of the production process was met by importing flax (at first from Holland and Flanders, and then increasingly from Russia and the Baltic), and putting it out to spinners. The yarn was then, in turn, put out to weavers. Serious efforts to promote commercial flax cultivation in Scotland were tacitly abandoned around the middle of the century, as promoters of the industry sought to capitalize on the opportunities presented by the newly introduced bounty system on exports. According to one commentator, 'real farmers' found the labour requirements of flax to be a distraction at the time of year when they were busiest. In order to meet the increasing demand for yarn in the second half of the 18th century, merchant-manufacturers extended their operations to the north and north-east of the central belt where both commercial agriculture and linen weaving were concentrated. This strategy enabled them to take advantage of the opportunity to meet growing demand for linens in the American colonies, in the context of relatively slow population growth, and the disappearance of the subsistence-oriented small-holder class which elsewhere provided much of the labour for proto-industrialization.(69)

Because Scottish merchants (in contrast to their Irish and Flemish counterparts), paid for spinning

directly, keeping women's labour costs down was a matter of immediate concern. Osnaburg manufacturers organized a boycott in 1749 in an attempt to lower spinners' wages, and as we have seen, two-handed wheels were introduced in the 1750s. By the 1790s yarn was being imported from Bremen to meet the shortfall in supply, as women in the lowlands abandoned spinning in preference for new opportunities in agricultural day-labour - and also, one assumes, as their husbands' and fathers' real incomes increased.

The Irish linen industry was able to grow by means of an continual process of 'underdevelopment.' It depended on the continuation of extremely low labour costs which discouraged the emergence of divisions of labour that might have improved efficiency. Thus Irish labour was characterized by low productivity because of a particular form of gendered interaction between household and market, whereby the under-remunerated labour of wives and daughters supplied both flax and yarn to the industry.

Both Scotland and Flanders were characterized by divisions of labour between the supply of raw materials and spinning. In the Scottish case merchants were obliged to lay out capital in importing flax and putting it out to spinners. They were thus confronted with an ongoing problem of keeping labour costs down in an economic environment where the trend was towards increasing real wages. Labour shortages may have spurred Scottish merchant-manufacturers to invest in spinning

machinery, but cheap and skilled immigrant labour from the Irish linen districts also helped to sustain Scotland's industrial transformation.

Finally, in Flanders, the emergence of specialist flax-cultivating and commercial agricultural zones ensured that increasing quantities of labour were allocated to spinning and weaving within the manufacturing zone in the context of growing demand for linens. However, costs were kept to a minimum because weaving households purchased their own raw material, and effectively absorbed the cost of spinning by having it done within their own households (or by purchasing yarn if necessary).

Conclusion

This chapter has examined a number of theoretical perspectives on proto-industrialization and the transition to capitalist industry. Theories of proto-industrialization have emphasized the part played by rural industry in generating population growth and abundant labour, although they have differed in their understanding of the mechanisms leading to this outcome. The theories have also represented proto-industrialization as a stage in the industrialization process, providing capital and cheap labour for the first factories. Again, there have been significant differences in how these relationships were understood.

Recent scholarship has attempted to modify the original statements on proto-industrialization in order

to account for regional variation in its development and outcomes. Pfister has suggested that differences in the relative productivity of proto-industrial tasks gave rise to differences in the allocation of labour at the level of the household, and thereby to varying demographic outcomes. Mokyr has argued that differences in the productivity of labour may explain why some proto-industrial regions with abundant labour made a sustained transition to industrial capitalism, whereas others did not.

This chapter has sought to tease out the question of differences in productivity by examining the trajectories of the Irish, Scottish and Flemish linen industries in the 18th century. Table 4 summarizes some of the key similarities and differences amongst the three cases. I have argued that productivity differences are mediated by the gender division of labour in proto-industrial households. Women were assigned low productivity tasks because their industrial activities were not distinguished from their everyday tasks as wives and mothers, and the amount of labour they could devote to such activities was thereby more expandable than that of men. The more phases of the production process carried out by women under these circumstances, the more proto-industrial production was inefficient, but cheap. Thus differences in the gendered interaction between household and market may help to explain variations in the development of proto-industrial regions.

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Endnotes

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(2) Quoted in Joel Mokyr, Industrialization in the Low Countries, 1795-1850 (New Haven, CT: Yale University Press, 1976), 71.

(3) Denis O'Hearn, 'Irish Linen: A Peripheral Industry,' in Marilyn Cohen (ed.), The Warp of Ulster's Past: Interdisciplinary Perspectives on the Irish Linen Industry, 1700-1920 (New York: St. Martin's Press, 1997), 179.

(4) T.M. Devine, 'The English Connection and Irish and Scottish Development in the Eighteenth Century,' in T.M. Devine and David Dickson (eds.), Ireland and Scotland, 1600-1850: Parallels and Contrasts in Economic and Social Development (Edinburgh: John Donald Publishers, 1983), 15.

(5) Mokyr, Industrialization in the Low Countries;
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Roy Porter (eds.), The Industrial Revolution in national
context: Europe and the USA (Cambridge: Cambridge
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(6) This is an elaboration on an argument first put
forward in Jane Gray, 'The Irish and Scottish Linen
Industries in the Eighteenth Century: An Incorporated
Comparison,' in Cohen (ed.) The Warp of Ulster's Past.

(7) Peter Solar has identified a pattern linking European
subsistence crises of the 1840s to linen manufacturing.
[Source].

(8) Joel Mokyr, 'Editor's Introduction' in The British
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(9) Vandenbroeke, 'Regional Economy of Flanders.'

(10) O'Hearn, 'Irish Linen,' 185.

(11) Gray, 'The Irish and Scottish Linen Industries in the Eighteenth Century,' 61-62.

(12) Mokyr, Industrialization in the Low Countries.

(13) Joel Mokyr, 'Industrialization and Poverty in Ireland and the Netherlands,' Journal of Interdisciplinary History 10, 3 (1980), 429-458, esp. 430. Joel Mokyr, 'Dear Labor, Cheap Labor, and the Industrial Revolution,' in Patrice Higonnet, David S. Landes and Henry Rosovsky (eds.) Favorites of Fortune: Technology, Growth and Economic Development since the Industrial Revolution (Cambridge, MA: Harvard University Press, 1991), 183. Mokyr, Industrialization in the Low Countries, 74.

(14) Alastair J. Durie, The Scottish Linen Industry in the Eighteenth Century (Edinburgh: John Donald Publishers, 1979), 95. Alexander J. Warden, The Linen Trade, Ancient and Modern (London: Longman, Green, Longman, Roberts and Green, 1864), 598-599. On the relative timing of mechanization in the three cases, see Durie, The Scottish Linen Industry, 98; Frank Geary, 'Deindustrialization in Ireland to 1851: some evidence from the census,' Economic History Review, 51, 3 (1998), 512-541, 523; Mokyr, Industrialization in the Low Countries, 72.

- (15) Joel Mokyr, 'Industrialization and Poverty,' 450.
- (16) Mokyr, 'Dear Labor, Cheap Labor,' 184-189.
- (17) For recent discussions see Frank Geary, 'The Belfast Cotton Industry Revisited,' Irish Historical Studies 26, 103 (May 1989), 250-267; Denis O'Hearn, 'Innovation and the World System Hierarchy: British Subjugation of the Irish Cotton Industry, 1780-1830,' American Journal of Sociology 100, 3 (1994), 587-621.
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(eds.) Textile History and Economic History: Essays in Honour of Miss Julia de Lacy Mann, (Manchester, Manchester University Press, 1973). For a more detailed discussion of the trends in Scottish and Irish exports, see Gray, 'The Irish and Scottish Linen Industries.' According to a pamphlet on the Spanish trade, published in Ireland in the 1790s, Flemish 'brabante florete,' or 'gant white sheetings' sold in Spain from 11d to 18d Irish currency. The official value per yard of Irish linen exports was 15d in the 1790s. See S.(C.) Merchant, Informations to the People of Ireland Concerning the Linen Trade of Spain, Portugal, and the Spanish West Indies. Published with the Allowance and at the Expence of the Linen Board. (Dublin: Mat Williamson, 1790), 8.

(22) Mokyr, Industrialization in the Low Countries, 69.

(23) Mendels, Industrialization and Population Pressure, esp. 220-277.

(24) See Hans Medick, 'The Proto-Industrial Family Economy: the Structural Functions of Household and Family During the Transition from Peasant Society to Industrial Capitalism,' Social History 3 (1976), 291-315 and 'The Proto-Industrial Family Economy,' in Peter Kriedte, Hans Medick and Jurgen Schlumbohm, Industrialization before Industrialization: Rural Industry in the Genesis of Capitalism, tr. Beate Schemp (Cambridge: Cambridge University Press, 1981), 74-93.

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(26) Kriedte, Medick and Schlumbohm, 'Proto-industrialization revisited,' 225.

(27) Christiaan Vandenbroeke, 'Proto-industry in Flanders: a critical review,' in Ogilvie and Cerman (eds.), European proto-industrialization, 102-117, 106.

(28) Vandenbroeke, 'Proto-industry in Flanders,' 107-109.

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(39) Liam Kennedy and Martin W. Dowling, 'Prices and Wages in Ireland, 1700-1850,' Irish Economic and Social History, 24 (1997), 62-104.

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(41) Vandenbroeke, 'Regional Economy of Flanders,' 164-168; Vandenbroeke, 'Proto-Industry in Flanders,' 112-116.

(42) L.M. Cullen, T.C. Smout and A. Gibson, 'Wages and Comparative Development in Ireland and Scotland, 1565-1780,' in Rosalind Mitchison and Peter Roebuck (eds.), Economy and Society in Scotland and Ireland, 1500-1939 (Edinburgh: John Donald, 1988), 105-116. See Kennedy and Dowling, 'Prices and Wages in Ireland.' Catharina Lis and Hugo Soly, 'Different Paths of Development: Capitalism in the Northern and Southern Netherlands during the Late Middle Ages and the Early Modern Period,' Review: Journal of the Fernand Braudel Center, 20, 2 (Spring, 1997), 211-242, esp. 226-227.

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(44) Mendels, Industrialization and Population Pressure, 206-207; Vandenbroeke, 'Proto-Industry in Flanders,' 113-114.

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(46) Sir Charles Coote, Statistical Survey of the County of Armagh (Dublin: Graisberry and Campbell, 1804).

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(50) Crawford, Handloom Weavers, 41; Durie, Scottish Linen Industry, 99. Mendels, Industrialization and Population Pressure, 199. For an interesting analysis of efforts to introduce the fly shuttle to Ireland in the early 19th century, see Anne McKernan, 'War, gender, and industrial innovation: recruiting women weavers in early nineteenth century Ireland,' Journal of Social History, 28, 1 (1995), 109-124.

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(67) Mendels, Industrialization and Population Pressure, 134-135. Young, Tour of Ireland, Volume 1, 116-258, passim.

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(70) See Collins, 'Proto-industrialization.'

Table 1: Output of Flemish, Irish and Scottish

Linen Industries 1700-1825(Thousands of Yards).

Year	Flanders	Ireland	Scotland
1700	7,700	13	N/A
1720	8,400	2,600	N/A
1750	9,300	11,200	7,600
1780	12,600	18,800	13,400
1800	12,600	35,700	24,200
1815	16,100	43,000	32,100
1825	17,700	55,100	N/A

Sources:

Flanders - Vandenbroeke provided an estimate of pieces of linen exported in his "Regional Economy of Flanders," 165. To convert these figures to thousands of yards, I have assumed that a piece consisted of 80 ells, and that a Flemish ell was 29 inches in length. Thus a piece was almost 65 yards long. These are the figures given by Mokyr in Industrialization in the Low Countries, 15.

However, Mendels in Industrialization and Population Pressure gave less generous figures, stating that an ell from Ghent was 26 inches (p. 72), and a piece of middling quality cloth 75 ells long (p. 200). This would make a piece less than 55 yards long. Merchant, in his Informations to the People of Ireland, published in 1790, stated that a half piece of Gant white sheeting was between 30 and 33 yards in length (p. 8). Thus Mokyr's figures seem to provide a reasonable estimate.

Ireland Yards of linen exported. The data are published in Conrad Gill, The Rise of the Irish Linen Industry (Oxford: Oxford University Press, 1925), 341-343.

Scotland Yards of linen stamped for sale. These figures thus include linens retained for domestic consumption, and are not strictly comparable with the figures for Ireland and Flanders. The data are published in Warden, Linen Trade, 480.

Table 2. Population in Ireland, Scotland and Flanders
(Millions)

Ireland		Scotland		Flanders	
Year	Population	Year	Population	Year	Population
1706	1.75-2.06	1700	1.07	1700	0.65
1753	2.22-2.57	1755	1.27	1750	0.83
1791	4.42	1801	1.67	1806	1.06

Sources: Tyson, "Contrasting regimes," 67; Dejongh, "New Estimates of Land Productivity," 26.

Table 3: Cost of Manufacturing Linen Yarn and Cloth in Armagh

A. Purchase Flax, Employ Spinners and Weavers, Sell Web	B. Purchase Flax, Employ Spinners, Sell Yarn	C. Purchase Yarn, Employ Weavers, Sell Web
<ul style="list-style-type: none"> ▪ 1.5 Stone Flax @ 7s (84d)=126d ▪ Spinning 7.5 Spangles (30 Hanks)@ 1s (12d)=90d ▪ Weaving 25 Yards @ 2.5d=62.5d ▪ Total Cost=278.5d ▪ Sell 25 Yards @ 11d =275d 	<ul style="list-style-type: none"> ▪ 1.5 Stone Flax @ 7s (84d)=126d ▪ Spinning 7.5 Spangles (30 Hanks)@ 1s (12d)=90d ▪ Total Cost=216d ▪ Sell 30 Hanks ▪ @ 5d=150 ▪ @ 7d=210 ▪ @ 8d=240 	<ul style="list-style-type: none"> ▪ 7.5 Spangles (30 Hanks) @ 7d per Hank=210d ▪ Weaving 25 Yards @2.5d=62.5 ▪ Total Cost=272.5d ▪ Sell 25 Yards @ 11d=275d

Source: Young, Tour in Ireland, Volume I, 121-122.

Table 4: The Eighteenth Century Linen Industry in Ireland, Scotland and Flanders

(i) Trade

Country	Principal Markets	Trend in Exports	Type of Linen Exported
Ireland	England/ North America	Increasing Rapidly From Mid-Century	Plain Linens with Growing Proportion Coarse Linens
Scotland	England/ Caribbean	Increasing Rapidly From Mid-Century	Coarse Linens
Flanders	Spain/Spanish Colonies	Increasing To Mid-Century, Stagnating from 1780s Onwards	Plain Linens With Growing Proportion Coarse Linens

(ii) Population and Standard of Living

Country	Population	Standard of Living
Ireland	Rapid Growth (High Fertility)	Low and Stagnating End of Century.
Scotland	Slow Growth (Low Infant Mortality)	Low but Rapidly Increasing End of Century.
Flanders	Rapid Growth (Low Infant Mortality)	Increasing to Mid-Century but Declining at End of Century

(iii) Organization and Development

Country	Organization of Industry	Skill Premium	Successful Industrial Transition?
Ireland	Kaufsystem with Spinners Cultivating Own Flax	Very High and Increasing	No
Scotland	Verlagsystem with Imported Flax	High but Decreasing	Yes
Flanders	Kaufsystem with Spinners Purchasing Flax from Specialist Cultivators	High	Yes

