

Department of Economics  
and  
Institute for Policy Analysis  
University of Toronto  
150 St. George Street  
Toronto, Ontario M5S 3G7  
Canada

**The Rise, Expansion, and Decline of the Italian Cloth Industries, 1100 - 1730:  
A Study in Economic *Conjoncture*, Transaction Costs, and Comparative Advantage**

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by

John Munro

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**Note:** This Working Paper no. 29 will never be published in English, in this format. Instead it will be published in a much condensed and truncated form (with most notes deleted), and in Italian translation, in *Rincascimento italiano et l'Europa*, vol. II: *Commercio e cultura mercantile*, ed. by Franco Franceschi, Richard Goldthwaite, and Reinhold Mueller. The final part of this study, on the Venetian cloth industry, has also been incorporated in Working Paper no. 26 [2006-01]: **South German Silver, European Textiles, and Venetian Trade with the Levant and Ottoman Empire, c. 1370 to c. 1720: A non-mercantilist Approach to the 'Balance of Payments Problem'**. In fact, the research for and the composition of each paper influenced the composition of the other paper. Were an English version of this Working Paper no. 29 ever to be published, then obviously the problem of overlap would have to be remedied, perhaps by eliminating the section on Venice or by drastically rewriting that section.

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Department of Economics  
University of Toronto

Author's e-mail: [munro5@chass.utoronto.ca](mailto:munro5@chass.utoronto.ca)

<http://www.economics.utoronto.ca/munro5>

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**The Rise, Expansion, and Decline of the Italian Cloth Industries, 1100 - 1730:  
A Study in Economic *Conjoncture*, Transaction Costs, and Comparative Advantage**

**Abstract:**                                **by John H. Munro (University of Toronto)**

This study of the Italian wool-based textile industries (woollens, worsteds, and serges) seeks to examine its rise, expansion, and ultimate decline, over a period of five centuries (from ca. 1200 to ca. 1730) in the context of both international competition and economic *conjoncture*, in the context of the major macro-economic and demographic changes that the European economy experienced during these five centuries. The story commences during the so-called 'Commercial Revolution' era of the thirteenth-century when the Franco-Flemish cloth industries of north-west Europe dominated the international markets in a very wide range of these textiles, even in the Mediterranean basin.

From the 1290s, and then into the better known period of the Hundred Years' War (1337-1453) the European economy suffered from the ravages of ever more widespread and debilitating warfare, throughout the Mediterranean basin and western Europe, and then from various factors, including plagues, that led to serious depopulation. The consequences led to a severe rise in transportation and transaction costs that gravely undermined the profitability of long-distance trade in cheaper textiles. That, in turn forced most textile manufacturers dependent on long-distance trade, and especially those who had operated as price-takers, to re-orient their export-based production to far higher priced, indeed luxury textiles, which could better sustain the burden of rising transactions costs, especially in acting as 'price-makers' engaged in monopolistic competition. That industrial-commercial transformation can be seen in the textile industries of northern France, the Low Countries, and England; but also those in Catalonia and above all in Italy: principally Tuscany and Lombardy. In so far as warfare and rising transaction costs limited the importation of even luxury textiles from north-west Europe, the Italian cloth industries thereby gained a far larger share of Mediterranean markets.

This study focuses in particular on the ensuing history of the Florentine woollen cloth industry in the later Middle Ages. One price that all of these luxury-oriented cloth industries had to pay was steeply rising tax burdens on exported English wools; for the prime determinant of luxury quality in these textiles was the use of the finer grade English wools, the best in the world, until the development (through breeding and management) of Spanish *merino* wools, which finally succeeded in rivalling and then surpassing the English by the later sixteenth century.

By the sixteenth century, with a reduction in European warfare and with renewed population growth, substantial economic growth, and significant innovations in transportation, transactions costs fell, and fell enough to make long-distance trade in cheaper textiles once more profitable; and that is reflected in product changes in the Florentine textile industry, which increasingly used Spanish *merino* wools in place of the English. But the most important events in the history of the Italian textile industries was the sudden rise of the Venetian cloth industry from the early to mid-sixteenth century, reaching a peak in the early seventeenth century, and then experiencing an equally rapid decline, in the face of English textile competition, by the agency of the new Levant Company, which gained major advantages over the Italians in the large Ottoman Empire. The study concludes by examining the nature of those English advantages, which lay far more in the commercial (and transportation sphere) than in the industrial sphere, in terms of both traditional heavy weight woollens (made from Spanish wools) and the lighter, coarser, and cheaper fabrics of the English New Draperies (benefiting from a transformation in English wool production, from the Tudor-Stuart Enclosures). In sum: a study of comparative advantage in five centuries of international trade, in wool-based textiles, in terms of transaction costs, inputs (wools), and commercial organization.

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**The Rise, Expansion, and Decline of the Italian Cloth Industries, 1100 - 1730:  
A Study in Economic *Conjuncture*, Transaction Costs, and Comparative Advantage**

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**Transaction costs and the international trade in textiles in medieval and early-modern Europe**

Textiles, along with food and shelter, supply one of the most basic needs of mankind, from time immemorial. As clothing, they provide us with not just warmth but protection from the elements – from the cold, to be sure, but from also excessive heat and inclement weather. They also protect us from the shame of nakedness, since most societies prohibit (or restrict) public nudity and require a modest decorum in various forms of socially acceptable clothing. At the same time, such varieties in clothing (dress) are also means of indicating or asserting social status; and related concepts of clothing style and fashion have often served to be major elements in determining changes in market demand.<sup>1</sup>

We can thus readily understand that textiles were produced almost everywhere, in medieval and early-modern Europe, including those known as ‘home-spun’ in so many peasant households. Yet relatively few regions succeeded, in terms of international competition, in producing and marketing the more fashionable and thus higher-valued textiles that thus also constituted the single most important manufactured commodity to enter both regional and international trade, from Roman times to the mid nineteenth century. The fact that most of these textiles were very durable and had a very highly favourable value to weight ratio also helps to explain their international commercial importance. That was all the more true, because transaction costs, including transport and all marketing costs, were generally more important competitive factors than production costs, for a wide range of textiles, until the eighteenth-century Industrial Revolution.<sup>2</sup>

The undoubted importance of the value:weight ratio in international trade must not, however, mislead us into believing – as so many historians have done – that such trade was restricted just to those very high-priced luxury textiles serving chiefly aristocratic markets. For the range of textile values in medieval and early-modern international trade was often surprisingly wide, even if that range of traded textiles did fluctuate during this long era, especially with changes in transaction costs. Such commerce extended well beyond Europe itself into North Africa and western Asia, and then, from the sixteenth centuries, into the Americas, as well. In the history of international trade, from the twelfth to eighteenth centuries, Italy was one of the three most important European regions in supplying such textiles, in a wide variety – along with the Low Countries (once including adjacent parts of northern France) and England.

Italy’s eminence in textile production was based on its overwhelming predominance in medieval and

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<sup>1</sup> See in particular, Frances Pritchard, ‘The Uses of Textiles, c. 1000 - 1500’, in David Jenkins, ed., *The Cambridge History of Western Textiles* (Cambridge, 2003), vol. I, pp. 355-77.

<sup>2</sup> See Douglass North, ‘Transaction Costs in History’, *Journal of European Economic History*, 14 (1985), 557-76; Douglass North, ‘Government and the Cost of Exchange in History’, *Journal of Economic History*, 44 (1984), 255-64; Douglass North and Robert Thomas, *The Rise of the Western World: A New Economic History* (Cambridge, 1973), pp. 71-96, 134-38; Douglass North, *Structure and Change in Economic History* (New York, 1981), chapters 1-5; Clyde G. Reed, ‘Transactions Costs and Differential Growth in Seventeenth Century Western Europe’, *Journal of Economic History*, 33 (March 1973), 177 - 90; John Munro, ‘The “New Institutional Economics” and the Changing Fortunes of Fairs in Medieval and Early Modern Europe: The Textile Trades, Warfare, and Transaction Costs’, *Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte*, 88:1 (2001), 1-47.

early-modern Europe's trade and finance. Indeed, the Italians – led by Venice, Florence, Genoa, and Milan in particular – had created the fundamental institutions of what historians now call the 'Commercial Revolution', a distinct era from the late tenth to early fourteenth centuries, with a commercial transformation and expansion that certainly proved to be the most powerful force in propelling the rapid growth of Europe's economy and population – more than doubling the size of both – during this period, indeed in producing what Robert Lopez called 'the birth of Europe'<sup>3</sup>. Yet Italy's true eminence in the production of luxury textiles (in Tuscany and Lombardy) came only in the ensuing era of economic contraction and population decline, during the fourteenth and fifteenth centuries, when, however, its predominance in international trade and finance became even stronger.

Before examining the macro-economic phenomena that helped bring about those commercial and industrial developments, with radical changes in Italian textile production, we must first understand the physical nature of the various textile products – in a spectrum or continuum running from relatively cheap to extremely costly fabrics – and the different technologies involved in their production.

### **The medieval technology of wool textile production: woollens, worsteds, and serges**

By the term textile (from *texere*, to weave) we mean four different classes of woven fabrics, defined by their component fibres: cottons, linens, silks, and the most important category, woollens – or wool-based cloths. This categorical structure is, however, somewhat misleading for the medieval and early-modern eras, since it neglects the ways in which manufacturers could combine fibres and fabrics. This study, however, is largely confined to the wool-based textile industry.

That industry in turn has three major divisions: woollens, worsteds, and hybrid serges or 'stuffs'. According to traditional textile historiography, true woollens were composed of very fine, short-fibred, yarns, in both warp and weft. In medieval Europe, by far the finest of these short-fibred wools came from England: the very best from the Welsh Marches of Herefordshire and Shropshire; the next best, from the adjacent Cotswolds (Gloucestershire, Worcestershire, Oxfordshire, and Berkshire); and, as a distinct third, from the Lindsey, Kesteven, and Holland districts of Lincolnshire, in the north-east. Not before the sixteenth century would these English wools face any rivals for quality: and then only from the more fully evolved *merino* wools of Spain.<sup>4</sup> These wools (medieval English and early modern *merino*) were heavily greased – with olive oil in Italy, and butter in the north – to protect their delicate fibres from damage in the ensuing production processes. For that reason a common French name for the woollen industry was *draperie ointe*. In medieval Italy (and generally elsewhere, on the continent) the wools required for the warp yarns, the stronger of the two, stretched between warp and cloth roller beams on the loom, were prepared by combing and spun on the 'rock' or drop spindle; those required for the weaker wefts (woven by insertion through groups of stretched warp yarns) were prepared by carding to be spun on the small spinning-wheel (introduced

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<sup>3</sup> Robert Lopez, *The Birth of Europe* (New York, 1967). See also: Robert Lopez, *The Commercial Revolution of the Middle Ages, 950-1350* (Cambridge, 1976); Robert Lopez, 'The Trade of Medieval Europe: the South,' in Michael Postan et al., eds., *The Cambridge Economic History of Europe*, Vol. II: *Trade and Industry in the Middle Ages*, (Cambridge, 1987), 338-412.

<sup>4</sup> John Munro, 'Wool Price Schedules and the Qualities of English Wools in the Later Middle Ages,' *Textile History*, 9 (1978), 118-69; John Munro, 'Spanish *Merino* Wools and the *Nouvelles Draperies*: an Industrial Transformation in the Late Medieval Low Countries', *The Economic History Review*, 2<sup>nd</sup> ser., 58:3 (August 2005), 431-84.

from Muslim Spain in the late twelfth century).<sup>5</sup> Those yarns, when woven on the horizontal broad loom (introduced in the eleventh century), were too weak to produce a durable cloth, so that the woven fabric, taken down from the loom, then had to be subjected to a process known as fulling.

In traditional foot-fulling, the cloth (up to 30 metres long) was immersed in a long, shallow stone or earthenware vessel filled with warm water, urine, fuller's earth (kaolinite), and soap. Two journeymen fullers then trod, with great force, on the woollen cloth for three days or more (depending on the quality and size) to achieve three objectives: to scour and cleanse the cloth of the oil; to force the short, curly and scaly wool fibre to interlace and interlock – in effect, to 'felt' the yarns; and to shrink the cloth, chiefly in its length, by about 50 percent of its surface area. The fulled and felted cloth then had a density and cohesion that made it virtually indestructible – and also very heavy. The cloth was then placed along a large structure known as a tentering frame, stretched on to the tenter-hooks, on all four sides. While the cloth was drying on this frame, all of the creases from the fulling processes were removed, and minor repairs were effected (by 'burling'). The fulled and 'tentered' woollen cloth was then delivered to the finishers, who used thistle-like teasels 'to raise the nap', to bring up all of the loose fibres, which were then repeatedly shorn with foot-long razor-sharp shears. After the combined processes of fulling, napping, and shearing, the weave was totally obliterated and the consequent texture was almost as fine as silk. The cloth was then usually 'dyed in the piece', which generally meant redyeing, since preliminary dyeing often took place in either the wools, usually with woad, to produce a uniform blue base, or in the yarns, if a variety of colours was desired, in the form of rayed (striped) or 'medley' cloths.

From the tenth century, however, the fulling process in Italy became mechanized: with the water-powered fulling mill.<sup>6</sup> Italy was indeed the first industrial region to adopt this significant innovation, which represented not just the initial but in fact the only significant process to be mechanized in the wool-based textile industries before the nineteenth century. England did not adopt the fulling mill until the later twelfth century, and its diffusion became widespread there only with what Eleanora Carus-Wilson called 'the industrial revolution of the thirteenth century'.<sup>7</sup> Though she exaggerated its consequences it was a remarkable innovation, representing the first conversion of rotary water-power – long used in grinding grain into flour

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<sup>5</sup> The warp yarns are those that are stretched between the warp beam at the rear of the horizontal loom and the cloth beam at the front; they pass through wired hooks (heddles) that are operated by foot-powered treadles, in alternate groups, to allow the weft yarns to be inserted through groups of warps and then pushed up, by a batten, into the fell of the cloth. Late-medieval English draperies and some in the Low Countries, by the fifteenth century, developed a woollen broadcloth prepared entirely from carded, wheel-spun wools; but most continental producers retained the methods described here. See Patrick Chorley, 'The Evolution of the Woollen, 1300 - 1700', in Negley B. Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10 (Oxford, 1997), pp. 7-34; John H. Munro, 'Textile Technology,' and 'Textile Workers,' in Joseph R. Strayer, et al., eds., *The Dictionary of the Middle Ages*, Vol. XI (New York, 1988), pp. 693-715; John Munro, 'Medieval Woollens: Textiles, Textile Technology, and Industrial Organisation, c. 800 - 1500', in David Jenkins, ed., *The Cambridge History of Western Textiles*, 2 vols. (Cambridge and New York: Cambridge University Press, 2003), Vol. I, pp. 181-227.

<sup>6</sup> Documented at Abruzzo, 962; Parma, 973; Verona, 985; and Lodi (near Milan), 1008. See Paolo Malanima, 'The First European Textile Machine,' *Textile History*, 17 (1986), 115 - 28; Munro, 'Medieval Woollens: Textile Technology', pp. 204-10. See also the sources cited in n. 5 above.

<sup>7</sup> Eleanora Carus-Wilson, 'An Industrial Revolution of the Thirteenth Century', *Economic History Review*, 1st series 11 (1941), reprinted in her *Medieval Merchant Venturers: Collected Studies* (London, 1954), pp. 183-211.

(since the second century BCE) – into reciprocal power, using cams, as small projections fixed along in a rotating drum on the water-wheel's main axle. As the water-wheel revolved, the cams made contact with similar grooved-projections on two large, heavy oak-wood trip-hammers, raising at first one, and then the other of pair of trip hammers. When the water-wheel began its descent, the cams passed by the trip-hammer's projections, thus releasing the very heavy hammer to fall with immense force into the fulling trough far below, while other cams on the revolving drum made contact with the second trip-hammer, repeating this process. The two trip hammers could pound the cloth up to forty times a minute; and, with just one attendant, they could scour and full a standard-sized good quality woollen cloth in about twenty hours, while needing only about nine hours for lesser quality cloths.<sup>8</sup>

Recent estimates indicate that, while traditional foot fulling account accounted for about 20 percent of the value-added manufacturing costs (before cloth finishing), mechanical fulling accounted for only 5 percent of such costs, thus representing a net cost savings of 75 percent. In the luxury woollens industries of the late-medieval Low Countries, however, much evidence indicates that, despite such potential savings, mechanical fulling was universally opposed, because of fears that the force of the oaken hammers would injure the very fine fibres and thus the luxury quality of the woollens, costing the industry far more in lost customers than any such cost savings could justify (which in fact represented only a small percentage of the very high sales prices).<sup>9</sup> Whether such considerations ever influenced production decisions in Florence's late-medieval cloth industry, producing equally expensive woollens, is not known; but certainly mechanical fulling was employed in the Medici's sixteenth-century Florentine workshops.<sup>10</sup> By that era, the cheaper line *nouvelles draperies* of the southern Low Countries were also using water-powered fulling-mills.<sup>11</sup>

The other major products of the wool-based cloth manufacturing industries are known, at least to English historians, as worsteds, but to continental textile historians by the French terms: *draperies légères* or *draperies sèches*. One of the most common names for this type of textile was 'say' or *saie* (from the Roman Latin *sagum*: a wool-cloak); and the industries producing them (in many varieties) were known as *sayetteries*. As the first French terms suggest, they were comparatively light textiles – about one quarter to one third the weight of the fulled woollen broadcloth. They were composed of wools that were not greased or oiled, for they did not require the same protection as did the fine, short-stapled scaly-fibred wools used in

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<sup>8</sup> See John Munro, 'Industrial Energy from Water-Mills in the European Economy, 5<sup>th</sup> to 18<sup>th</sup> Centuries: the Limitations of Power', in Simonetta Cavaciocchi, ed., *Economia ed energia, secoli XIII - XVIII*, Atti delle 'Settimane di Studi' e altre Convegni, Istituto Internazionale di Storia Economica, 'Francesco Datini da Prato', vol. 34 (Florence, Le Monnier: 2003), pp. 223-69.

<sup>9</sup> John Munro, 'Industrial Entrepreneurship in the Late-Medieval Low Countries: Urban Draperies, Fullers, and the Art of Survival,' in Paul Klep and Eddy Van Cauwenberghe, eds., *Entrepreneurship and the Transformation of the Economy (10th - 20th Centuries): Essays in Honour of Herman Van der Wee* (Leuven, 1994), pp. 377-88; John Munro, 'The Symbiosis of Towns and Textiles: Urban Institutions and the Changing Fortunes of Cloth Manufacturing in the Low Countries and England, 1270 -1570', *The Journal of Early Modern History: Contacts, Comparisons, Contrasts*, 3:1 (February 1999), 1-74.

<sup>10</sup> Raymond de Roover, 'A Florentine Firm of Cloth Manufacturers: Management of a Sixteenth-Century Business,' *Speculum*, 16 (1941), 3-33; reprinted in his *Business Banking, and Economic Thought in Late Medieval and Early Modern Europe: Selected Studies of Raymond De Roover*, ed., Julius Kirshner (Chicago, 1974), pp. 85-118.

<sup>11</sup> Munro, 'Medieval Woollens: Textile Technology and Industrial Organization', pp. 181-227; and sources cited in nn. 8-9.

manufacturing true woollens; and for that reason a common French name for this branch of the industry was *draperie sèche*.<sup>12</sup> Instead, these fabrics were composed, in both their warp and weft yarns, of much longer-fibred, coarse, straight, and very strong wools, both of which were combed rather than carded. The yarns, spun by either the ‘rock’ or the ‘wheel’, were so strong and tightly twisted that manufacturing was virtually complete with the weaving process, except for bleaching or dyeing and pressing. Thus the classic true worsteds underwent no fulling, napping/teaselling, or shearing; and indeed their coarse, much straighter wool fibres lacked the felting properties required for these finishing processes. The distinguishing visible feature of these worsteds, therefore, was their highly visible weave, of various designs, chiefly twilled, designs that normally could not be seen in a true woollen. The absence of fulling (and thus lack of compression) largely explains their light weight; the combination of much lower-cost wools and far simplified production processes similarly explains their relative cheapness.<sup>13</sup>

A third variety of wool-based textiles, commonly called *serges*, was simply a combination of these two basic types: a hybrid fabric composed of a long-stapled ‘dry’ combed worsted warp yarn and a shorter-stapled ‘greased’ carded woollen weft yarn. These textiles were only partially fulled, chiefly to remove the grease; and, like true worsteds, they were often neither napped nor shorn. Many textiles of the twelfth and thirteenth centuries, especially those known as *saga*, *sargia*, *stanfortes*, were of this type, as were (evidently) the Hondschoote *saies* of the fifteenth and sixteenth centuries, which served as the model for the so-called New Draperies, which were introduced into East Anglia, from the 1560s, by Flemish refugees after the Revolt of the Netherlands against Spanish rule.<sup>14</sup>

### **International trade in textiles in the Mediterranean basin: ca. 1100 - ca. 1320**

Between the twelfth and early eighteenth centuries, when this survey ends, the Italian and other European cloth industries underwent some dramatic changes, both in terms of manufacturing and international trade. During the twelfth and thirteenth centuries, from the earliest records on cloth sales in the Mediterranean basin, we find that textiles from north-west Europe (northern France, the Low Countries, the Rhineland, England) predominated over those manufactured within the Mediterranean basin itself. Furthermore, the greater majority of the textiles sold in this region, by both value and volume, were of the much cheaper, lighter, worsted or semi-worsted ‘serge’ varieties. In two major studies, one for Flanders and the other for England, Patrick Chorley has shown that the sales value of northern says, biffes, burels, rayés, and similar cheaper, lighter cloths was ‘typically about 40-60 percent of that of the *lowest* grade of [Franco-Flemish] coloured woollens’; and in two Iberian price-lists, their values were only 25 - 33 percent of those for such woollens. Subsequently, in 1318-23, when Mediterranean markets were no longer so favourable for the cheaper, lighter northern textiles, they still accounted for about 60 percent of the Franco-Flemish cloths then marketed by the Florentine Del Bene firm, whose price records also show that Flemish say prices

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<sup>12</sup> Nor were they as fully scoured as those in true woollens, so that the fibres retained their own natural lanolin. See sources in n. 5 above. For comparative cloth weights, see Munro, ‘Medieval Woollens’, Tables 5.7-5.8, pp. 312-16.

<sup>13</sup> In Antwerp, in 1539, a Ghent *dickedinnen* broadcloth (21 metres by 1.225 metres) would have cost a master mason exactly 300.0 days’ wages (at 12d *groot* Flemish per day) – well more than his annual wage income; but a Hondshoote single *saye* would have cost him only 18.9 days’ wages. See John H. Munro, ‘Textiles as Articles of Consumption in Flemish Towns, 1330 - 1575,’ *Bijdragen tot de geschiedenis*, 81:1-3 (1998), 275-88.

<sup>14</sup> They were produced under various names: stuffs, serges, says, bays, perpertuanas. See below, pp. and n. 79.

ranged from 13 to 33 percent of those for the better Flemish woollens (and 18 - 42 percent of the cheaper woollens' median prices).<sup>15</sup>

Chorley similarly contended, with equally persuasive evidence, that most of the English textiles exported to the Mediterranean from the later twelfth to early fourteenth centuries were also inexpensive fabrics; and furthermore, that the preponderant majority of English cloth exports of this era went to this region, to Italy especially. Manufactured chiefly in England's eastern lowland towns, from York to London, the most important cloths exported were the coarse Northampton, 'greys', and the marginally more expensive but still 'comparatively cheap' stamforts -- a term that he believes is more likely based upon *stamen forte* (i.e., strong warp) than the place name (Stamford).<sup>16</sup> Similar studies by other historians demonstrate similar patterns of English cloth exports during the thirteenth century: an overwhelming predominance of the cheaper, lighter textiles, most of which were sent to Mediterranean and especially Italian and Iberian markets.<sup>17</sup>

Finally, Hilmar Krueger, in a study confined to the years 1155-1206, confirms these same patterns of Genoese trade in textiles with Sicily, Syria, Egypt, and Constantinople. He found, in particular, that northern French and Flemish says and serges (*sagie, sargie, saie*) 'were exported more frequently than other type of cloths'; and that northern cloths, including especially the cheaper, relatively light English *stanfortes* [stamforts], predominated over Mediterranean textiles. Of those textiles produced within Italy itself, he found that 'only the Lombard fustians formed an impressive item of export'.<sup>18</sup>

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<sup>15</sup> Patrick Chorley, 'The Cloth Exports of Flanders and Northern France During the Thirteenth Century: A Luxury Trade?' *Economic History Review*, 2nd ser. 40:3 (August 1987), 360-61; Hidetoshi Hoshino, 'The Rise of the Florentine Woollen Industry in the Fourteenth Century,' in N.B. Harte and K.G. Ponting, eds., *Cloth and Clothing in Medieval Europe*, Pasold Studies in Textile History, no. 2 (London, 1983), Table 11.2, p. 190, shows the same for the sale of textiles at Florence, in the early 14th century: from Caen, Orchies, Hondschoote, Arras, Paris, Poperinge, Saint-Denis, and Ghistelles.

<sup>16</sup> Patrick Chorley, 'English Cloth Exports During the Thirteenth and Early Fourteenth Centuries: the Continental Evidence', *Historical Research: The Bulletin of the Institute of Historical Research*, 61:144 (February 1988), 1-10. For a somewhat different and not too convincing view of stamforts, or *stanforts*, *estanforts*, see Natalie Fryde von Stromer, 'Stamford Cloth and Its Imitations in the Low Countries and Northern France during the Thirteenth Century,' in Erik Aerts and John Munro, eds., *Textiles of the Low Countries in European Economic History*, Proceedings of the Tenth International Economic History Congress, Studies in Social and Economic History, Vol. 19 (Leuven, 1990), pp. 8-13.

<sup>17</sup> Wendy Childs, *Anglo-Castilian Trade in the Later Middle Ages* (Manchester, 1978), pp. 73-75; Wendy Childs, 'The English Export Trade in Cloth in the Fourteenth Century,' in Richard Britnell and John Hatcher, eds., *Progress and Problems in Medieval England: Essays in Honour of Edward Miller* (Cambridge and New York, 1996), pp. 121-47; John H. Munro, 'The 'Industrial Crisis' of the English Textile Towns, 1290 - 1330,' in Michael Prestwich, Richard Britnell, and Robin Frame, eds., *Thirteenth-Century England*, VII (Woodbridge, 1999), pp. 103-41; Eleanora M. Carus-Wilson, 'The English Cloth Industry in the Twelfth and Thirteenth Centuries,' *Economic History Review*, 1st ser. 14 (1944); reprinted in Eleanora M. Carus-Wilson, *Medieval Merchant Venturers: Collected Studies* (London, 1954), pp. 211-38.

<sup>18</sup> See Hilmar Krueger, 'The Genoese Exportation of Northern Cloths to Mediterranean Ports, Twelfth Century,' *Belgische tijdschrift voor filologie en gescheidenis/Revue belge de philologie et d'histoire*, 65 (1987), pp. 744-47. See also R. L. Reynolds, 'The Market for Northern Textiles in Genoa, 1179-1200,' *Belgische tijdschrift voor filologie en gescheidenis/Revue belge de philologie et d'histoire*, 8 (1929), 831-50.



### Italian textile production, ca. 1100 - ca. 1330: fustians, serges, coarse woollens

Indeed, as Maureen Mazzaoui has demonstrated, Italy's most important textile-manufacturing industry during the twelfth, thirteenth, and early fourteenth century was undoubtedly that producing fustians: a hybrid textile composed of a linen (flax) warp yarn and a cotton weft yarn.<sup>19</sup> The term is thought to be derived from al-Fustāt, an important industrial suburb of Cairo, which had reputedly inaugurated the production of such textiles, in the tenth or eleventh centuries, by using local Egyptian flax for the linen warps and imported Syrian-Palestinian or South Asian cotton for the weft yarns. By the thirteenth century, the manufacture of these very light and comfortable textiles had spread through the Mediterranean basin and even into Flanders, in northwestern Europe; but clearly the undisputed leader in the European production of these linen-cotton fustians was Lombardy. Whether or not Mazzaoui was justified in describing this as a 'mass-production, mass-consumption' industry, there can be doubt that its products were also relatively very cheap, as well as light, and very popular amongst the lower middle classes in this region during the later twelfth, thirteenth, and early fourteenth centuries.

During this same era, Italians were also manufacturing a very wide variety of other light and relatively cheap fabrics, in as great a profusion as was then to be found in northern France, the Low Countries, and England. In many towns in Lombardy, and also in Tuscany and Venetia, we find evidence for a wide variety of worsted or sem-worsted says, and very coarse woollens, variously woven from low-priced, mediocre Italian, North African, and other western Mediterranean wools, which were marketed under a variety of names: such as *stametto*, *trafilato*, *tritana*, *taccolino*, *saia*, *saia cotonata*. Also to be found is the manufacture of *tiretaines*, closely resembling fustians – in weight and market values – composed of mixtures of woollen, linen, and/or cotton fibres.<sup>20</sup> During this era, the Umiliati of Florence, a lay brotherhood that had been founded in 1140 (reaching its peak in the 1270s) was famed for producing very cheap textiles for the poor and lower classes. According to Eleanora Carus-Wilson, who had examined a very detailed Venetian price-list of both imported and domestic textiles, dated 1265, 'almost without exception the Italian cloths are cheap; even the costliest do not approach in value those of Ypres, Douai, and Cambrai' [from Flanders]<sup>21</sup>. Subsequently, for the early fourteenth century, Hidetoshi Hoshino's analysis of the sales registers of the great Florentine merchant firms revealed a very similar picture: that these coarse and relatively cheap fabrics accounted for the vast majority of their sales textile transactions. He also found that the relatively

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<sup>19</sup> Maureen Mazzaoui, 'The Cotton Industry of Northern Italy in the Late Middle Ages, 1150 - 1450,' *Journal of Economic History*, 32 (1972), 262-86; Maureen Mazzaoui, *The Italian Cotton Industry in the Later Middle Ages, 1100 - 1600* (Madison, 1981), pp. 28-72, 87-104. Before the 18<sup>th</sup>-century Industrial Revolution, Europeans were unable to spin cotton yarns – at an acceptable cost – that were strong enough to be subjected to the stress and tension imposed on the warp yarns (see n. 5 above).

<sup>20</sup> While most such *tiretaines* were cheap or cheaper fabrics, some were, however, luxury fabrics because they contained silk, rather than cotton; and some of these were dyed in *kermes*, the ultra-luxurious dyestuff used to produce woollen scarlets. See Sharon Farmer, 'Biffes, Tiretaines, and Aumonières: the Role of Paris in the International Textile Markets of the Thirteenth and Fourteenth Centuries', *Medieval Clothing and Textiles*, 2 (2006), 73-79, at 75-78, for the production of both silk-based and *kermes*-dyed *tiretaines* in late thirteenth-century Paris, the latter almost certainly containing silk. Furthermore, she states that 'the higher-priced *tiretaines* were almost always worn by royalty or by the highest members of the aristocracy'. (p. 77).

<sup>21</sup> Eleanora Carus-Wilson, 'The Woollen Industry,' in M.M. Postan and E.E. Rich, eds., *Cambridge Economic History of Europe*, Vol. II: *Trade and Industry in the Middle Ages* (Cambridge, 1952), pp. 390-91.

better quality Florentine cloths of this era sold for no more than the competing Franco-Flemish *says* and *biffes* (from Paris, Saint-Denis, Caen, Poperinge, Arras, Ypres, Hondschoote, and Gistel), whose median prices ranged from 0.8 to 1.8 florins; and thus, as in the earlier Venetian tariff, they were then worth no more than 10 to 30 percent of the current median values for better quality Flemish and Brabantine woollens.<sup>22</sup>

### **English wools, *panni alla francesca*, the Champagne Fairs, and the *Arte di Calimala***

Nevertheless, the significant role that so many prominent Italian mercantile firms – the Riccardi, Pulci, Frescobaldi Bianchi, Cerchi Bianchi, Bardi firms in particular – played in purchasing high grade English wools for export, during the later thirteenth century, especially from Cistercian monasteries, would lead one to suspect that some such wools reached the textile manufacturing towns in Lombardy and Tuscany. England was then also the overwhelmingly predominant supplier of wool, exporting an annual average of 25,480 sacks in the 1290s, from which 110,414 broadcloths could have been woven.<sup>23</sup> Yet the Italians then transported these wools by overland routes through the Low Countries and France. Thus, much or even most of these wools may have been consumed by the cloth manufacturing industries in this region.

A far more important import into later thirteenth-century Italy were undyed and undyed woollens that had been manufactured, from these same English wools, in the towns of the southern Low Countries and northern France – and known as *panni alla francesca* -- but acquired by Italian merchants trading at the Champagne Fairs, the commercial hub of western Europe, and transported down the Rhone Valley, and then, via Genoa, to Tuscany in particular. In Florence, merchants and industrial entrepreneurs in the *Arte della Calimala* prospered by dyeing and finishing these Franco-Flemish woollens and by having them re-exported to various Mediterranean markets, including those of the Islamic world.<sup>24</sup> Particularly renowned were the extremely costly and ultra-luxurious *scarlatto* woollens, dyed a vivid scarlet with kermes (*kermès* in French; *chermes* in Italian; *carmes* in Spanish), extracted from the desiccated eggs of various Mediterranean shield

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<sup>22</sup> Hidetoshi Hoshino, 'Per la storia dell'arte della lana in Firenze nel trecento e nel quattrocento: un riesame,' *Annuario dell'Istituto giapponese di Roma*, 10 (1972-73), 33-80; Hidetoshi Hoshino, *L'arte della lana in Firenze nel basso medioevo: il commercio della lana e il mercato dei panni fiorentini nei secoli XIII-XV* (Florence, 1980); Hidetoshi Hoshino, 'La produzione laniera nel Trecento a Firenze', in Eugenio Garin, ed., *Il Tumulto dei Ciompi: un momento di storia Fiorentina ed Europea* (Florence, 1981), pp. 41-58; Hoshino, 'The Rise of the Florentine Woollen Industry in the Fourteenth Century,' pp. 184-204; Franco Franceschi, *Oltre il 'Tumulto': i lavoratori fiorentini dell'Arte della Lana fra Tre e Quattrocento* (Florence, 1993), especially pp. 3-231; Marcello Berti, *Lana, panni e strumenti contabili nella Toscana bassomedievale e dell'prima età moderna* (Lucca, 2000), especially pp. 31-118. See also the once standard histories: Alfred Doren, *Studien aus der Florentiner Wirtschaftsgeschichte*, Vol. I: *Die Florentiner Wollentuchindustrie vom XIV. bis zum XVI. Jahrhundert* (Stuttgart, 1901); Robert Davidsohn, 'Blüte und Niedergang der Florentiner Tuchindustrie', *Zeitschrift für die gesamte Staatswissenschaft*, 85 (1928), 225-55.

<sup>23</sup> See Table 1, and Eleanora M. Carus-Wilson and Olive Coleman, *England's Export Trade, 1275-1547* (Oxford, 1963); John Munro, 'Medieval Woollens: The Western European Woollen Industries and their Struggles for International Markets, c.1000 - 1500,' in David Jenkins, ed., *The Cambridge History of Western Textiles*, 2 vols. (Cambridge, 2003), Vol. I, pp. 278-83; Tables 5.1 - 5.4, pp. 299-307; Munro, 'Wool Price Schedules', pp. 126-35; Richard Kaeuper, *Bankers to the Crown: The Riccardi of Lucca and Edward I* (Princeton, 1973), pp. 33-38.

<sup>24</sup> Armando Saporì, *Una compagnia di calimala ai primi del trecento*, Biblioteca storica toscana vol. 7 (Florence, 1932).

lice.<sup>25</sup>

### **Warfare, transaction costs, and transformations in international textile commerce: 1290s - 1330s**

This structure of Italian textile production and textiles trade underwent dramatic and far-reaching changes from the onset of widespread, virtually continuous, and ever more disruptive warfare from the 1290s through to the 1330s, leading into the far better known era of the Hundred Years War (1337-1453). Those wars began almost simultaneously in the eastern and western Mediterranean and in north-west Europe: with the Egyptian-based Mamlūk conquest of the last Crusader outposts in Palestine (1291), the Genoese-Venetian wars to control the alternative trade by the Black Sea (1291-99), the Ottoman Turkish invasions of the Byzantine Empire in Anatolia and the Balkans (from 1303), the North African Merinid (or Marinid) invasions of Spain (1291-1340, with ancillary wars amongst Christian and Muslim states), the wars of the Sicilian Vespers (1282-1302), followed in Italy by the Guelf-Ghibelline wars in Italy (1313-43), which in turn invited foreign invasions (by Germans, Hungarians, Angevins, Catalans); and in the north-west, the Anglo-Scottish, Anglo-French and the Franco-Flemish wars, and civil wars, from 1296 to 1328.

Certainly by the 1320s, the combination of those wars had raised both the transportation and general transaction costs in long-distance international trade often to prohibitive levels for the commerce in relatively low valued textiles.<sup>26</sup> The chief costs did not arise so much from destruction or even violence, but from the break down of authority, encouraging increased brigandage and piracy; from Church and state-imposed bans on trade with the enemy, especially with Mamlūk Egypt, bans that were circumvented only by costly trade ‘licences’; from the construction of more heavily armed ships, especially with the new artillery; and from the various forms of war-financing, in taxes, requisitions, forced loans, and currency debasements. In particular, these wars were chiefly responsible for the rapid decline and fall of the Champagne Fairs, on which the north-south commerce in textiles had so fundamentally depended.<sup>27</sup> The alternative route by the Mediterranean Sea and the Atlantic Ocean that the Italians developed from the 1320s was really not an effective substitute for transporting textiles, especially cheaper textiles, because such maritime trade, about five times longer by sea

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<sup>25</sup> John Munro, ‘The Medieval Scarlet and the Economics of Sartorial Splendour’, in Negley B. Harte and Kenneth G. Ponting, eds., *Cloth and Clothing in Medieval Europe: Essays in Memory of Professor E. M. Carus-Wilson*, Pasold Studies in Textile History No. 2 (London, 1983), pp. 13-70.

<sup>26</sup> These wars and changes in transport and transaction costs are analysed in: John Munro, ‘Industrial Transformations in the North-West European Textile Trades, c. 1290 - c. 1340: Economic Progress or Economic Crisis?’ in Bruce M. S. Campbell, ed., *Before the Black Death: Studies in the ‘Crisis’ of the Early Fourteenth Century* (Manchester and New York, 1991), pp. 110 - 48; John Munro, ‘The Origins of the English ‘New Draperies’: The Resurrection of an Old Flemish Industry, 1270 - 1570,’ in Negley Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10 (Oxford and New York, 1997), pp. 35-127; Munro, ‘The Textile Trades, Warfare, and Transaction Costs’, pp. 1 - 47; Munro, ‘The Symbiosis of Towns and Textiles’, pp. 1-74.

<sup>27</sup> In 1327, an Italian merchant cited those very wars as the reason why he was no longer able to transport his cloths to Genoa from the now dying Champagne Fairs. See Renée Doehaerd, ed., *Les relations commerciales entre Gênes, la Belgique, et l’Outremont, d’après les archives notariales génoises aux XIIIe et XIVe siècles*, Institut historique belge de Rome, 3 vols. (Brussels, 1941), Vol. III, no. 1869, p. 1156: ‘Nec per terra ire potuit communiter propter guerras que presentaliter occurrentes inter Januinos guelfos et guibelines’.

than by land, from Venice to Bruges, was so intermittent and so often threatened by piracy and naval wars.<sup>28</sup>

The evidence for the harm that this warfare-induced rise in transportation and transaction costs had inflicted on the European textile trades can be seen in the virtual disappearance of those *sayetteries* and the related *draperies légères (sèches)* and similar industries in northern France, the southern Low Countries, and England, especially those that had specialized in producing relatively light and cheap worsted or semi-worsted fabrics for export to Mediterranean markets. Abundant evidence on textile sales in the Mediterranean basin, from the 1330s, also reveals the virtual disappearance of these cheaper, light northern textiles from Mediterranean markets, except for a few, occasional, random says, chiefly the so-called ‘Irish says’. England (East Anglia), to be sure, continued in producing worsteds for export to Germany and the Baltic, for several more decades, until they too virtually disappeared, by the 1380s, when similarly adverse conditions, especially a rise in piracy, and Polish-German warfare, increased transaction costs in Baltic commerce. The drastic decline in European population during the fourteenth century itself exacted a severe toll in rising transaction costs, because, the transactions sector in international trade, with very high fixed costs, is subject to significant scale economies, so that smaller, contracted markets meant far higher unit costs in trade.<sup>29</sup>

The acutely severe problems facing the northern European textile producers, those for whom the Italians had been their chief commercial agents and customers, were two-fold. First, their transport and transactions costs were so much higher than those for the local Mediterranean producers of competing ‘cheap’ textiles. Second, because all these producers, northern and Mediterranean, had been manufacturing very similar products with very close substitutes, i.e., with a very elastic demand for their products, they had to act as ‘price-takers’ in Mediterranean markets.<sup>30</sup> For they could not have increased prices to cover rising costs without losing all their customers to lower-cost and thus lower-priced competitors. Consequently, and evidently by the 1330s, most of the northern draperies in northwestern France (Artois, Normandy), the Low Countries, and England had chosen to re-orient most if not all of their export-oriented production to the manufacture of very high priced luxury woollen textiles.

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<sup>28</sup> From the first records in 1332 to 1400, Venetian galleys made only twenty-four voyages to Bruges. See the arguments and evidence in John Munro, ‘The Low Countries’ Export Trade in Textiles with the Mediterranean Basin, 1200-1600: A Cost-Benefit Analysis of Comparative Advantages in Overland and Maritime Trade Routes’, *The International Journal of Maritime History*, 11:2 (Dec. 1999), 1 - 30; A. Tenenti and C. Vivanti, ‘Le film d’un grand système de navigation: les galères marchandes vénitiennes, XIVe-XVe siècles’, *Annales: Économies, sociétés, civilisations*, 16 (1961), 83-86; Doris Stoeckly, *Le système de l’Incanto des galées du marché à Venise (fin XIIIe-milieu XVe siècle)* (Leiden and New York, 1995), indicating very intermittent galley service until 1376, and then virtually annual service from 1384 (to the end of her series in 1453). Sea transport, when it occurred, was generally cheaper than overland trade in this war-torn era. Thus in 1397-97 transporting Wervik woollens by sea from Bruges to Barcelona cost 15 percent of the price (3.5 francs for a cloth worth 23 francs), but 22 percent (5 francs) via the land route. See Federico Melis, ‘La diffusione nel Mediterraneo occidentale dei panni di Wervicq e delle altre città della Lys attorno al 1400’, in *Studi in onore di Amintore Fanfani*, 3 vols., Vol III: *Medioevo* (Milan, 1962), pp. 233-4, n. 30. But some eighty years earlier transporting Caen says overland to Florence, via the Rhone route (the only safe route), had cost only 8.8 percent of their much lower value. Saporì, *Una compagnia di calimala*, pp. 97-99.

<sup>29</sup> See the publications of Douglass North in n. 2 above.

<sup>30</sup> Hoshino has commented that, during this very period, ‘many cities [in the Mediterranean] competed for the same market with materials which were qualitatively identical’. See Hoshino, ‘Rise of the Florentine Cloth Industry’, p. 185.

Such a radical industrial and commercial transformation had two related objectives or justifications that better ensured the survival of cloth-manufacturing, commerce, and some prosperity in both north-west Europe, and then also in Italy, as well, albeit for a smaller number of producers and merchants. First, the value:weight ratios for these luxury cloths meant that they could far better sustain the steep rise in transport and transaction costs, which would have obviously constituted a smaller proportion of retail prices than those costs did for the *saies*, *biffes*, *stanfortes*, and other cheaper textiles. Second, and more important, such production involved a far higher degree of product differentiation – especially in those techniques designed to convince consumers of superior quality over competitors’ products. Thus these cloth-manufacturing towns, at least collectively in terms of the cloth guilds each town, rather than in terms of individual producers or ‘drapers’, became ‘price-makers’ engaged in *monopolistic competition*, creating a much more inelastic demand for their distinctively different woollens. That allowed them to raise prices, to some reasonable degree, to meet any rising costs, without necessarily losing so many customers— certainly not as many as did the cheaper line northern cloth producers.<sup>31</sup>

Further evidence for this radical industrial re-orientation in fourteenth-century Flanders was the rise of the so-called *nouvelles draperies* (led by Wervik, Kortrijk, Comines, Menen), which in itself also represented one of the most significant economic changes in the late-medieval Low Countries. All of these *nouvelles draperies* had begun their existence, in either the twelfth or thirteenth centuries, as rural or village draperies, in producing exclusively the coarser, lighter, and cheaper fabrics; and all of them, from the 1330s, had switched completely to the manufacture of genuine heavy-weight luxury quality woollens, in ‘counterfeit’ imitation of those produced in the large, traditional urban draperies (Ghent, Ypres, Bruges, Brussels, Mechelen, Leuven), but sold at lower prices, if somewhat higher than the mean prices for English woollen broadcloths. They came to enjoy a remarkable success in fourteenth-century Mediterranean and especially Italian markets, even though, as we shall see, the same industrial transformation was also then occurring in Italy.<sup>32</sup>

This shift to luxury-cloth production, however, later exacted a heavy cost for many of the woollen-cloth industries – especially the more traditional and conservative draperies, in both the Low Countries and Italy, because the *sine qua non* for such luxury production was the exclusive use of the finer grade English wools. That grave and vital dependence soon put these luxury draperies at the mercy of English royal fiscal policy, i.e., in the taxation of wool exports, whose consequences will soon be revealed for the textile industries in both the Low Countries and Italy. Subsequently, many of the *nouvelles draperies* in the southern Low Countries and many Italian draperies found a form of salvation by switching to the new Spanish *merino* wools, which, however, did not really rival the best English wools in quality until the sixteenth-century.<sup>33</sup>

### **The transformations of Italian textile production from the 1320s: Lombardy and Tuscany**

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<sup>31</sup> See John Munro, ‘Urban Regulation and Monopolistic Competition in the Textile Industries of the Late-Medieval Low Countries’, in Erik Aerts and John Munro, eds., *Textiles of the Low Countries in European Economic History, Studies in Social and Economic History*, Vol. 19 (Leuven, 1990), pp. 41 - 52; and John Munro, ‘The West European Woollen Industries’, pp. 244-55.

<sup>32</sup> John Munro, ‘Industrial Transformations in the North-West European Textile Trades’, pp. 110 - 48; John Munro, ‘Spanish *Merino* Wools’, pp. 431-84; Melis, ‘La diffusione nel Mediterraneo occidentale’, pp. 219-43; and Berti, *Lana, panni e strumenti contabili*, pp. 49-118, for cloth imports into Pisa. In 1410-11, Wervik accounted for 173 of 578 woollens sold there: 29.9 percent (Table 1, p. 65), but 120 out of 4,732 sold in 1414-15, or just 2.5 percent (Table 10, p. 82).

<sup>33</sup> For this switch to Spanish wools, see below, pp.

Indeed, this very same economic model, examined for the southern Low Countries, can be applied to the textile economies of later-medieval Italy, as we can witness in two clearly related economic transformations. First, we note the same virtual disappearance of many of those similar cheaper and lighter textile exports from Italy to various far-flung Mediterranean markets – and especially to the Islamic world. If the Lombard fustians industries were still faring the best during the early fourteenth century, they, too, began a slow if irredeemable decline from the 1320s, by which time, it should be noted, the populations of both Provence and Tuscany (and possibly also Lombardy) had already experienced a significant fall in population.<sup>34</sup> Warfare, rather than disease, may have been the major cause of that demographic and economic decline, and no part of western Europe was more continuously ravaged by warfare than was Italy, well into the 1380s.

Certainly such warfare was the major factor responsible for the rise of the very competitors who would become the chief nemesis responsible for the final downfall of the Lombard fustian industry. For in the 1370s, after military strife in northern Italy had seriously disrupted the supply of fustians marketed in South Germany, the major towns of this region -- Ulm, Augsburg, Ravensburg, Constance, and Basel -- began converting their own domestic-oriented, low-quality linens crafts into the manufacture of linen-cotton fustians. Though beginning as a local ‘import-substitution’ industry, the South German fustian manufacturers subsequently expanded to become, by the mid fifteenth century, the most important supplier of these relatively inexpensive light textiles for European markets; and thus they represent the first important example of a cheaper-line textile industry that achieved a major growth in output in the later-medieval European economy.<sup>35</sup>

The other major commercial-industrial transformation that had also become quite evident by the early fourteenth century, certainly by the 1320s, was the decline of the Florentine *Arte di Calimala* and, in almost a mirror image, the rise of the previously far less important guild of cloth manufacturers, the *Arte della Lana*, which had now begun to shift its production more and more to so-called *panni alla francesca* – i.e., fine woollens that imitated Franco-Flemish styles. Obviously the rapid rise of this ‘import-substitution’ industry took place at the direct expense of the *Arte della Calimala*, whose decline must be blamed essentially upon

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<sup>34</sup> For war-induced population decline in Provence (especially Marseilles), see Georges Lesage, *Marseille angevine: recherche sur son evolution administrative économique et urbaine de la victoire de Charles d'Anjou à l'arrivée de Jeanne Ire (1264-1348)* (Paris, 1950), doc. no. 6, p. 184: letter of Robert d'Anjou, 21 Oct. 1331. In Tuscany, Prato's urban population indices fell by 29.6 percent from 1300 to 1339; for the rural population, by 38.7 percent; in rural Pistoia, from 1244 to 1344, the depopulation was 36.3 percent. David Herlihy and Christiane Klapisch-Zuber, *Tuscans and Their Families: A Study of the Florentine Catasto of 1427* (New Haven and London, 1985), pp. 60-92; David Herlihy, *Medieval and Renaissance Pistoia: The Social History of an Italian Town, 1200-1430* (New Haven: Yale University Press, 1967), pp. 55-120; Munro, ‘Industrial Transformations’, pp. 120-30.

<sup>35</sup> See Mazzaoui, *The Italian Cotton Industry*, pp. 129-53; Hermann Kellenbenz, ‘The Fustian Industry of the Ulm Region in the Fifteenth and Early Sixteenth Centuries,’ in Negley B. Harte and Kenneth G. Ponting, eds., *Cloth and Clothing in Medieval Europe: Essays in Memory of Professor E. M. Carus-Wilson*, Pasold Studies in Textile History no. 2 (London, 1983), pp. 259-78; Munro, ‘Origins of the New Draperies’, pp. 69-71; John Munro, ‘South German Silver, European Textiles, and Venetian Trade with the Levant and Ottoman Empire, c. 1370 to c. 1720: A Non-mercantilist Approach to the Balance of Payments Problem’, in Simonetta Cavaciocchi, ed., *Relazione economiche tra Europa e mondo islamico, secoli XIII - XVIII*, Atti delle “Settimana di Studi” e altri convegni, no. 38, Istituto Internazionale di Storia Economica “Francesco Datini” (Florence: Le Monnier, 2007), forthcoming.

the virtual collapse of their commercial networks based on the now virtually extinct Champagne Fairs. Though one might instead attribute their plight more directly to the sharp rise in transportation and transactions costs involved in importing Franco-Flemish woollens, that argument becomes less convincing when we realize that the success of the *Arte della Lana* was dependent on another import from a far greater distance, namely English wools. We might assume, in terms of the economics of value:weight ratios, that it would be cheaper to transport semi-finished woollens than sacks of raw wool. Even though that wool was increasingly imported by sea, rather than overland, directly from Southampton via the ‘Straits of Marroch’ (Gibraltar), that maritime transport was very costly, adding 25 percent to the price paid for a sack of Cotswold wool landed by Venetian galleys. Galleys were far more expensive to operate than were cogs and the later carracks; but they were far safer to operate (with lower insurance rates) for the very valuable cargoes of English wool and Tuscan woollens.<sup>36</sup>

Whatever the price that the cloth-producing *lanaiuoli* of the *Arte della Lana* paid for these English wools, from the 1330s, so successful were they in producing and marketing high-priced luxury quality woollens that they soon reduced, quite drastically by the later fourteenth century, the production of their once prominent cheaper-line textiles for their export markets (though retaining it for local markets): for much the same reasons as did the northern draperies. There is also no doubt that, while the Flemish and Brabantine draperies did maintain some success in marketing their similarly high-valued luxury woollens in the Mediterranean – in contrast to the desperate plight of the cheaper line semi worsted draperies, they did lose considerable ground to the Tuscan and Lombard woollen cloth industries, especially from the middle of the fourteenth century, so that these Low Countries’ draperies were forced to become ever more dependent on the Hanseatic markets in Germany, Poland, Russia, and Scandinavia, as did the Dutch and English woollen cloth industries. In Florence, by the late 1330s, according to Hoshino, the city’s now very fine woollens had become the most important exports for its great mercantile firms, evidently accounting for about 75 percent of their cloth sales abroad.<sup>37</sup>

Hoshino contends, however, that the Florentine *Arte della Lana* did not really achieve its much more complete (if never fully complete) shift to luxury production, with even higher priced woollens, before the later fourteenth century, when Florentine woollens had clearly become by far the most expensive to be found

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<sup>36</sup> Wools shipped to Venice, at £2 sterling in shipping costs per sack purchased for £8 sterling; other charges raised total marketing costs to £6 11s. 0d. sterling per sack (81.9 percent). British Library, ‘Noumbre of Weyghtes’, also cited in Edmund B. Fryde, ‘Anglo-Italian Commerce in the Fifteenth Century: Some Evidence about Profits and Balance of Trade’, *Revue belge de philologie et d’histoire*, 50 (1972), 345-55. See also Edmund B. Fryde, ‘Italian Maritime Trade with Medieval England (c. 1270- c. 1530)’, *Recueils de la société Jean Bodin*, 32 (1974), 291-337, reprinted in his *Studies in Medieval Trade and Finance* (London, 1983), stating, on pp. 309-10, that the Genoese usually employed cheaper carracks; and that Genoese freight rates for wool were only 5.16 percent of the price (8s. 3d. per sack); those for alum and woad, about 8 percent of their prices; and also Edmund B. Fryde, ‘The English Cloth Industry and the Trade with the Mediterranean, c. 1370 - c. 1530,’ in Marco Spallanzani, ed., *Produzione, commercio e consumo de panni di lana nei secoli XII - XVII*, Istituto internazionale di storia economica ‘F. Datini’ Prato, Series II: Atti delle ‘Settimane di Studio’ e altri convegni (Florence, 1976), pp. 343-67, reprinted in his *Studies in Medieval Trade and Finance* (London, 1983); and Eliyahu Ashtor, ‘Catalan Cloth on the Late Medieval Mediterranean Markets,’ *Journal of European Economic History*, 17 (Fall 1988), 227-57.

<sup>37</sup> Hoshino, ‘Rise of the Florentine Woollen Industry’, pp. 191-204; Hoshino, *L’Arte della Lana*, pp. 153-229; Hoshino, ‘Per la storia dell’ arte della lana’, pp. 61-76.

in Mediterranean markets.<sup>38</sup> In the Pisan market, during the years 1354 to 1371, the mean recorded price of Florentine woollens was 43.35 gold florins (*fiorino d'oro*) or £6.50 sterling; and the highest price were 115 florins or £17.25 sterling; by the 1390s, their mean price had risen to 55.9 florins (£8.38 sterling). By the later fourteenth century, Florentine woollens were also the single most important textiles that the Datini firm of Prato were selling in Catalonia, with an average value of 64.43 florins (£9.66 sterling), in total accounting for 27 percent of its sales revenues there. In the Syrian and Egyptian markets of this same era (c. 1390-1405), Florentine woollens were also the most expensive and amongst the most popular, selling at prices ranging from 35 to 54 florins (£5.25 to £8.10 sterling), compared to the sales prices for Flemish woollens: e.g., 38.5 florins (£5.78 sterling) for those from Mechelen and 19.2 florins (£2.84 sterling) for those from Wervik; but Florentine woollens were much longer than those produced in Flanders. In Poland, the most popular Italian woollens marketed during the 1390s were certainly again the Florentine. But the Italian woollens were then far less popular than Flemish and Brabantine broadcloths, and considerably less expensive than the very finest from the Low Countries. With a standardised dimension of 35 ells length (24.5 metres), the Florentine woollens sold for 32 florins (£4.81 sterling), while those from Bruges and Brussels sold for 43.75 florins (£6.56 sterling) and 46.67 florins (£7.00 sterling).<sup>39</sup>

During the second half of the fourteenth century, other northern Italian towns had followed Florence's example in producing very fine, luxury-quality woollens, if rather less expensive than the Florentine cloths. In Tuscany, apart from Florence as the undisputed leader, the other major cloth towns were Prato, Pisa, Lucca, Bologna, and Perugia. In Lombardy, by far the most important was Milan (reputedly with 363 drapery firms in the 1390s); but Como, Monza, Cremona, Parma, Bergamo, Brescia, Verona, Padua, Vicenza, Treviso, and Mantua were also important cloth-manufacturing towns. In the Pisan commercial accounts for 1354-71, Lombard woollens from Milan and Como, evidently of very high quality, had an

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<sup>38</sup> See the sources in n. 29; and Mazzaoui, *Cotton Industry*, p. 216, n. 11, who states that 'in 1382 San Martino cloth made with English wool accounted for 43 percent of total Florentine woolen cloth output', which, however includes those cloths produced for local, domestic consumption. See below, pp.

<sup>39</sup> See Munro, 'Industrial Transformations', Appendix 4.1, Tables A - D. pp. 143-48; Munro, 'West European Woollen Industries', table 5.10: I - VI, pp. 318-24. In sharp contrast, the more infrequent imports of western *harras* -- presumably Arras says -- then sold for an average price of only 4.37 gold florins at Cracow, i.e., about the same price for the so-called 'Irish' says then being sold in Spain and Italy. Prices from: Eliyahu Ashtor, 'L'exportation de textiles occidentaux dans le Proche Orient musulman au bas moyen âge (1370 - 1517)', in Luigi de Rosa, et al., eds., *Studi in memoria di Federigo Melis*, Vol. II (Florence, 1978), pp. 303 - 77; Eliyahu Ashtor, *The Levant Trade in the Later Middle Ages* (Princeton, 1983), pp. 151-56, 341-66; Ashtor, 'Catalan Cloth', pp. 227-57; Federigo Melis, 'Uno sguardo al mercato dei panni di lana a Pisa nella seconda metà del trecento', *Economia e storia*, 6:1 (March 1959), 321-65; Federigo Melis, *Aspetti della vita economica medievale: studi nell'archivio Datini di Prato*, Vol. I (Florence, 1962), part 5: 'L'industria laniera,' pp. 455-729; Melis, 'La diffusione nel Mediterraneo occidentale', pp. 219-43; Jerzy Wyrozumski, 'The Textile Trade of Poland in the Middle Ages,' in Negley B. Harte and Kenneth G. Ponting, eds., *Cloth and Clothing in Medieval Europe: Essays in Memory of Professor E. M. Carus-Wilson*, Pasold Studies in Textile History no. 2 (London, 1983), pp. 248 - 57; Hoshino, *Arte della Lana*, Table XXVIII-XXIX, pp. 218-19; Table XXXIII, p. 224 (also in *lira di piccioli*), Table XLVIII-LV, pp. 291-96 (in ducats, and in Sicilian *tari*). Prices were usually expressed in *fiorino d'oro* or in ducats, which virtually always had the same exchange rates (since each normally consisted of 3.55 grams of gold). See Peter Spufford, *Handbook of Medieval Exchange*, Royal Historical Society Guides and Handbooks no. 13 (London, 1986), pp. 1-57, 80-114 (Florence, Venice, Genoa); Mario Bernocchi, *Le monete della repubblica fiorentina*, 4 vols. (Florence, 1974-78); Richard Goldthwaite and Giulio Mandich, *Studi sulla moneta fiorentina, secoli XIII - XVI* (Florence, 1994). For cloth dimensions, see n. 38 below.



average price of 27.55 florins (£4.13 sterling), while Tuscan cloths from Siena, Prato, and Pisa sold for a somewhat lower average price of 20.43 florins (£3.06 sterling). Both the Tuscan and Lombard woollens were, it must be noted, far more expensive than even the very best English broadcloths (except for the very few scarlets) exported during this era; and the Lombard cloths were priced higher than all but the very best woollens from the lesser ranking *nouvelles draperies* of fourteenth-century Flanders and Brabant. Despite their high sales prices, the Tuscan and Lombard woollens collectively accounted for over half (57 percent) of the Pisan cloth sales of this era.<sup>40</sup> In the Datini accounts for cloth sales in Spain from 1394 to 1410, however, only a very few other Italian woollens competed with the overwhelmingly dominant Florentine woollens: just 86 cloths from Prato and Genoa, with a mean value of only 30.78 florins (£4.62 sterling), compared to the sales of 2,652 Florentine woollens, with a mean value of 64.43 florins (£9.67 sterling).<sup>41</sup> All of these textiles sold in these markets would have cost a master mason or carpenter well more than a year's annual money wage income.<sup>42</sup>

In none of these late fourteenth-century accounts -- whether Spanish, Pisan, Sicilian, Byzantine, Syrian, Egyptian, or Polish -- do we find any evidence for the sale of those very cheap Florentine and Lombard woollen-worstedes and *saia* that had featured so prominently in twelfth- and thirteenth-century Mediterranean markets, though undoubtedly their production did continue for local Italian consumption.

### **The debate about the volume of Florentine cloth production during the fourteenth century**

If we may be fairly certain about the relative values of textiles sold in Mediterranean markets during the fourteenth century, we are far less confident about the changing volumes of textile production. The most famous contemporary account, and one that in certain respects accords well with this thesis of radical industrial reorientation, is that presented by the Florentine chronicler Giovanni Villani (d. 1348). He contended that Florentine cloth production had fallen from about 100,000 pieces around 1310 to about 75,000 in the years 1336-38; and that the number of cloth-manufacturing firms had declined from 200 to 150 (supposedly employing 30,000 artisans). Villani's estimate of the latter output's value, at 1.2 million gold florins, and thus with a mean value of 16 gold florins per cloth, was nevertheless still much higher than the value for the much larger output of 1310, 'when English wools were not imported', because those earlier cloths 'were coarser and worth only half as much'. Hoshino states, however, that Villani's estimates for the late 1330s were grossly exaggerated; for, in his view, annual cloth outputs could not have exceeded 24,000

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<sup>40</sup> Melis, 'Uno sguardo al mercato dei panni di lana a Pisa', Tables I, V, VI, X, pp. 326-7, 342-43, 347, 363-4. For cloth dimensions, see pp. 325-9, nn. 12-15 and p. 353, no. 56.

<sup>41</sup> Cloth sales in Barcelona, Valencia, and Majorca by the Datini firm of Prato. Melis, 'La diffusione nel Mediterraneo', Table IV, p. 229. The Florentine woollens were then also about 40 percent longer than the Flemish Lys valley cloths: 18.875 canne vs. 13.33 canne. 1 canna = 4 braccia = 2.067 m. The price of the even the cheapest Italian woollens was still higher than the mean price of 27.9 florins for 1618 woollens from the leading Flemish *nouvelles draperies* of Wervik, Kortrijk, Comines and Menen. See also Munro, 'Spanish Merino Wools', 431-84.

<sup>42</sup> Certainly in late-medieval England and the Low Countries: see Munro, 'Textiles as Articles of Consumption', pp. 275-88; John H. Munro, 'Changing Patterns of Colours and Values of Woollen Textiles in the Southern Low Countries, 1300 - 1550: The Anti-Red Shift -- to the Dark Side', *Medieval Clothing and Textiles*, 3 (2007): forthcoming.

to 30,000 woollens (with about 300 *bottega* producing 80 to 100 cloths a year).<sup>43</sup> His estimate for the late 1330s, however, is rather too close to the accepted estimates of annual cloth outputs for the years from 1373 to 1382: which is indeed virtually the same figure, 30,000 woollens.<sup>44</sup>

If we were to accept Hoshino's figures, we would have to believe the improbable: that Florence had been able to maintain its general level of cloth production over these five tumultuous decades, despite having suffered both a drastic depopulation from bubonic plagues and a severe contraction in its markets. First, and foremost, since there were no significant technological changes to increase labour productivity in this era, a precipitous drop in population meant a corresponding reduction in the labour supply (possibly an even greater contraction in the supply of skilled labour), and thus in the potential maximum production capacity. According to both Lopez and Herlihy, Florence's population had fallen from about 90,000 in 1338 to just about 40,000 in 1427 (as measured by that year's *Catasto* or tax census): a severe drop of 56 percent.<sup>45</sup>

Second, even if the Florentine woollen cloth industry had been able to maintain its production capacity, the disastrous fall in Western Europe's population in general – perhaps 40 percent by the late fourteenth century – and disruptions of traditional trade routes and markets obviously meant a serious decline in aggregate cloth sales, though to be sure a decline that, for Florence and other major Italian cloth producers, was offset to the extent that they succeeded in displacing Flemish, Brabantine, and northern French woollens in Mediterranean markets.

There are two more reasons for believing that Florentine cloth sales and thus production had fallen substantially by the end of the fourteenth century. The first is the already observed rise in the gold-florin values of Florentine and other Italian woollen cloths. If we accept Villani's estimate of the mean value for the late 1330s (16 florins), that value had well more than doubled by the 1390s, in real terms. If we also accept the standard law of demand – that demand varies inversely with the price – aggregate sales may have fallen substantially, though not proportionately, if demand had become less elastic at the higher prices (in accordance with the economics of 'price-making' monopolistic competition). Indeed, to the extent that western Europe experienced a more highly skewed distribution of wealth and income in the second half of the fourteenth century, as several historians have contended, then such changes may have helped sustain sales of these luxury woollens; and that may also help explain the general reorientation of West European textile

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<sup>43</sup> See Hoshino, *Arte della Lana*, chapter 4, pp 153-211, especially pp. 194-200. Citing Giovanni Villani, *Cronica*, libro XI [sic], cap. XCIV. In my editions: Giovanni Villani, *Nouva Cronica*, ed. Giuseppe Porta, 3 vols. (Parma, 1990-91), Vol. III: *Libri XII - XIII*, libro XII, cap. XCIV, pp. 197-202; Giuseppe Sansone and Giulio Curà, eds., *Giovanni Villani: La "Nouva Cronica"* (Rome, 2002), Libro XII, cap. XCIV, pp. 863-55. Villani died from the Black Death in 1348. See also Hoshino, 'La produzione laniera nel Trecento a Firenze', pp. 41-58; Hoshino, 'Rise of the Florentine Woollen Industry', pp. 184-204, and sources in n. 20 above.

<sup>44</sup> See below, p. and n. 56.

<sup>45</sup> Robert Lopez, Harry Miskimin, and Abraham Udovitch, 'England to Egypt, 1350-1400: Long-Term Trends and Long-Distance Trade,' in M.A. Cook, ed., *Studies in the Economic History of the Middle East*, (London, 1970), pp. 93-128; Lopez, 'The Trade of Medieval Europe: the South', pp. 338-412; Herlihy, *Medieval and Renaissance Pistoia*, pp. 55-77; Herlihy and Klapisch-Zuber, *Tuscans and Their Families*, pp. 60-92.

production towards very high value fabrics.<sup>46</sup> That also includes, of course, the rise and expansion of the late-medieval Italian silk industry.<sup>47</sup>

### **The question of the wool supply: English and Spanish wools**

The second factor to be considered in understanding the steep decline in Florentine cloth production during the later fourteenth century also helps to explain why Florentine and other Italian cloths woven from fine English wools became so expensive: namely, the English crown's taxation of wool exports. Wool, in providing England's overwhelmingly predominant and most lucrative export, and one so well organised, was the most obvious and by far the most important object of that fiscal policy. When export taxes commenced in 1275, under King Edward I, they were quite modest: 6s 8d sterling per sack, just 4.91 percent of the average value exported. But when his grandson Edward III commenced the Hundred Years' War in 1337, he sought to finance his conquest of France with sharp increases in wool export duties: rising from 26s 8d per sack for denizen exports and 30s 0d per sack for alien (i.e., Italian) exports in 1337 to 50s 0d per sack for denizens and 53s 4d per sack for aliens in 1370. In 1399, the alien duty was raised again to 60s 0d (£3 sterling) per sack.

Because these duties were fixed rather than *ad valorem*, the real tax burden rose with the general deflation, and fall in nominal wool prices, of the late fourteenth century. As a consequence, by 1400, the denizen export tax amounted to 49.25 percent of the mean value of exported wools, while the alien export tax burden was obviously higher, at 59.10 percent of that mean value.<sup>48</sup> The impact of that tax burden can be seen in the documentary evidence, from the 1430s, that English (Calais) Staple wools accounted for 65 to 70 percent of the pre-finishing production costs in the luxury woollen draperies of the southern Low

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<sup>46</sup> See sources in n. 42; and Robert Lopez, 'Hard Times and Investment in Culture', K.H. Dannenfeldt, ed., *The Renaissance: Medieval or Modern?* (Heath Series, New York, 1959), pp. 50-63; Robert Lopez and Harry Miskimin, 'The Economic Depression of the Renaissance', *Economic History Review*, 2nd ser. 14 (1962), 408-26; David Herlihy, 'The Distribution of Wealth in a Renaissance Community: Florence 1427', in Philip Abrams and E.A. Wrigley, ed., *Towns in Societies: Essays in Economic History and Historical Sociology* (Cambridge, 1978), pp. 131-58; Herlihy, *Pistoia*, pp. 189-97; Herman Van der Wee and Theo Peeters, 'Un modèle dynamique de croissance interseculaire du commerce mondiale, XIIe-XVIIIe siècles', *Annales: E.S.C.*, 15 (1970), 100-28. The fact, however, that the cheaper-valued luxury woollens of the Flemish *nouvelles draperies* had better sales in the later-medieval Mediterranean basin than those of the more expensive woollens from the traditional Flemish and Brabantine urban draperies indicates that a more highly skewed income distribution (if it took place) and thus demand had only a limited impact on textile markets, and had a lesser relative importance than did the rise in transaction costs, and changes in other supply factors.. See n. above; and Munro, 'Medieval Woollens: Struggle for Markets', pp. 249-62; Munro, 'Textile Trades, Warfare, and Transaction Costs', pp. 1-47.

<sup>47</sup> See Anna Muthesius, 'Silk in the Medieval World', in David Jenkins, ed., *The Cambridge History of Western Textiles*, 2 vols. (Cambridge, 2003), vol. I, pp. 325-54, especially pp. 332-43.

<sup>48</sup> See Munro, 'Medieval Woollens: Struggle for Markets', pp. 278-85, Table 5.1-2, pp. 299-303; W. Mark Ormrod, 'The Crown and the English Economy, 1290-1348', in Bruce M. S. Campbell, ed., *Before the Black Death: Studies in the 'Crisis' of the Early Fourteenth Century* (Manchester and New York, 1991), pp. 149-83.

Countries.<sup>49</sup> In view of the higher wool-export taxes and the much higher transportation costs involved in shipping English wools to Italy, such wools undoubtedly then accounted for an even higher proportion of production costs and very high sales prices in the Italian cloth industries,

Certainly that rising tax burden contributed to the very sharp decline in aggregate wool exports, all the more so with the establishment of the Calais Wool Staple in 1363, by which the crown created a woollers' cartel that was designed to pass the tax incidence more fully on to the foreign buyers (rather than on to the English woolgrowers, in the form of lower prices). From the decade 1361-70 to 1401-10, as Table 1 indicates, total English wool exports fell from an annual mean of 28,290.50 sacks to one of just 13,936.20 sacks – a fall of 51 percent, one greater than any estimate of the aggregate European population decline in this era. Because of the growing differential between denizen and alien export taxes, the decline in alien (Italian) wool exports was even more precipitous: from an annual mean of 9,667.73 sacks in 1361-70 to one of just 1,338.10 sacks in 1401-10. That can be expressed more dramatically by calculating that the Italian share of English wool exports fell from 34.17 percent of the total in 1361-70 to just 9.60 percent in 1401-10.<sup>50</sup> Consequently, unless the Florentine *Arte della Lana* had succeeded in finding a suitable substitute form of wool for weaving its luxury-quality woollens, its export-oriented, luxury-cloth production must have declined very substantially (though perhaps the production from domestic wools for local markets did not decline as much).

As noted earlier, Spanish *merino* wools had not yet evolved to become such an effective substitute for English wools. Indeed, current evidence indicates that these *merino* wools were the recent product of cross-breeds of domestic Castilian sheep with imported rams from Merinid realms of North Africa, whose introduction probably occurred soon after the Spanish victory at the Battle of Rio Salado, in 1340, which restored peace and ended forever the threat of Muslim Merinid reconquest of the Iberian peninsula. Since the pre-*merino* Spanish wools had been regarded as amongst the very worst in Europe, so that their use was forbidden even in the cheaper-line cloth industries, and since North African wools were then mediocre in quality, their evolution to become, by the late sixteenth, early seventeenth century the finest wools in the world – a primacy in quality they retain to this very day – remains a mystery. Possibly it may be explained by the genetic union of two recessive genes from the two breeds.<sup>51</sup>

That evolution was also dependent on devising the proper techniques of cross-breeding and also of sheep grazing and management, especially in terms the famous Castilian *transhumance*: the annual migrations from the high northern plateaux of Leon and Segovia some 725 km to the southern plains of Extremadura and Andalusia. This form of itinerant pasturages involved sparse feeding in mountainous regions with often

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<sup>49</sup> John Munro, 'Industrial Protectionism in Medieval Flanders: Urban or National?' in David Herlihy, H.A. Miskimin, and A. Udovitch, eds., *The Medieval City* (London and New Haven, 1977), Table 13.2 (Leuven in 1434 and 1442: 76.2% and 68.8%), p. 256; Munro, 'Medieval Scarlet', Table 3.1221, p. 52 (Ypres, 1501: £6.601 groot Flemish = £4.543 sterling, for Cotswolds wool = 64.22% of total pre-finishing costs: £10.278 groot Flemish = £8.758 sterling).

<sup>50</sup> For the statistical data, see Munro, 'Medieval Woollens: Struggle for Markets', Tables 5.3-5.4, pp. 304-07. In 1378, the Italians were given parliamentary exemption from the requirement to transport all wool from England to the new Calais Staple, provided that they shipped the wool directly by sea from Southampton to Italy 'via the Straits of Marroch' (i.e., Gibraltar).

<sup>51</sup> See Robert Lopez, 'The Origin of the Merino Sheep', *The Joshua Starr Memorial Volume: Studies in History and Philology* (a publication of *Jewish Social Studies* no. 5, New York, 1953), pp. 161-68; Munro, 'Spanish Merino Wools', pp. 438-40. See the next note.

chilly climates, both of which – as with medieval English wools – promoted an improved fineness. The much later, fully evolved *merino* fleeces were even shorter-fibred and finer than England's Welsh March wools, similarly curly and scaly, with excellent felting properties.<sup>52</sup>

Inferior though the early, *merino* wools may have been, even decades after slow improvements in Castilian flock management, some Italian cloth industries were experimenting in using them by the later 1370s (Milan being the first, in 1375), 1380s, and early 1390s (about thirty years before their acceptance in the southern Low Countries), generally under the name of *lane di San Mateo*. In the various cloth industries of Milan, Florence, Verona, Prato, and Genoa, they generally ranked a poor fourth or fifth in value, after (in this order) English, Minorcan, Majorcan, and French (Provençal) wools. These Spanish wools cost, at most, only 30 to 40 percent as much as the English Cotswolds wools used in these Italian draperies.<sup>53</sup> Clearly these *merino* wools could not yet be expected to rescue the fortunes of the later-medieval Florentine or other Italian luxury woollen cloth industries.

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<sup>52</sup> Nobody, however, has yet fully and biologically explained how *merino* wools were subsequently improved to attain such a high degree of fineness. See Carla and William Phillips, *Spain's Golden Fleece: Wool Production and the Wool Trade from the Middle Ages to the Nineteenth Century* (Baltimore and London, 1997), pp. 7-23, 33-39, 97-125; Julius Klein, *The Mesta: A Study in Spanish Economic History, 1273-1836* (Cambridge, Mass., 1920), pp. 8, 12-15, 17-21, 28-30, 320, 607, 708; Claude Carrère, 'Aspects de la production et du commerce de la laine en Aragon au milieu du XVe siècle', in Marco Spallanzani, ed., *La lana come materia prima: I fenomeni della sua produzione e circolazione nei secoli XIII-XVII*, Istituto internazionale di storia economica, Prato, Serie II (Florence, 1974), pp. 205-19; Reyna Pastor de Togneri, 'La lana en Castilla y León antes de la organización de la Mesta', *Moneda y crédito*, no. 112 (March 1970), 47-70, reprinted in Spallanzani, *La lana come materia prima*, pp. 253-67; Ángel Cabo Alonso, 'Medio natural y trashumancia en la España peninsular', in Felipe Ruiz Martín and Ángel García Sanz, eds., *Mesta, transhumancia y lana en la España moderna* (Barcelona, 1998), pp. 11-14; Marie-Claude Gerbet, *L'élevage dans la royaume de Castille sous les rois Catholiques (1454-1516)*, Publications de la Casa de Valázquez: Série Études et Documents no. 6 (Madrid, 1991), pp. 77-110, 223-59, 329-74. For Spanish *merino* wools in the 17<sup>th</sup> and 18<sup>th</sup> centuries, see H.B. Carter, *His Majesty's Spanish Flock: Sir Joseph Banks and the Merinos of George III of England* (London, 1964).

<sup>53</sup> San Mateo was then a Catalan town that served as a distribution centre for Castilian, but also other Iberian wools. In Florence and Prato, in 1396-98, the best Spanish wools were priced at 14.50 florins per 100 lb. were worth only 41.2 percent of the Cotswolds wools, priced at 35.17 florins per 100 lb. Another Prato wool price schedule of the 1390s similarly priced Spanish wools (£21 0s 06 *affiorino*) at just 41 percent of the English wools listed. At Genoa, in March 1395, Spanish wools cost 10 lire per cantaro, compared to 26-30 lire for English wools (including Cotswolds, at 26 to 28 lire) per cantaro. See Doren, *Studien aus der Florentiner Wirtschaftsgeschichte*, pp. 69-71; Caterina Santoro, *Gli uffici del comune dei Milano de del dominio visconteo-sforzesco (1216-1515)*, Archivio della Fondazione italiana per la storia amministrativa, vol. 7 (Milan, 1968), doc. no. 10, p. 179 (1375); Egidio Rossini and Maureen Mazzaoui, 'Società e tecnica nel medioevo: La produzione dei panni di lana a Verona nei secoli XIII-XIV-XV', *Atti e memorie della Accademia di Agricoltura, Scienze e Lettere di Verona*, 6th ser., 21 (1969-70), 571-624; Federigo Melis, 'La lana della Spagna mediterranea e della Barberia occidentale', in Marco Spallanzani, ed., *La lana come materia prima: I fenomeni della sua produzione e circolazione nei secoli XIII-XVII*, Istituto internazionale di storia economica, Prato, Serie II (Florence, 1974), pp. 241-51; Melis, *Aspetti della vita economica medievale* Vol. I, part 5: 'L'industria laniera,' doc. no. 350 (Aug. 1390), p. 488; and pp. 536-37, 542, and table facing p. 554; Jacques Heers, 'Il commercio nel Mediterraneo alla fine del XIV secolo e nei primi anni del secolo XV', *Archivio storico italiano*, 113 (1955), 192-95; Iris Origo, *The Merchant of Prato: Francesco di Marco Datini* (London, 1957), pp. 69-70, 74-76; Mazzaoui, *Cotton Industry*, pp. 216-17.

### Industrial organization and Florentine political events: the *lanaiuoli* and the *Arte della Lana*

The plight of the later-fourteenth century Florentine woollen cloth industry can also be revealed by an examination of its socio-political history, which in turn requires a basic understanding of its organizational structure. As noted earlier, cloth production had come to be governed by the guild known as the *Arte della Lana*, whose predominant members were known as *lanaiuoli*. They were mercantile and industrial entrepreneurs in the cloth trade, consisting of family firms or more commonly commercial partnerships; and they organized production under a ‘putting-out (*Verlag*) system of production

The Italian *lanaiuoli* had no exact counterparts in northern Europe, the closest being the thirteenth-century Flemish and Artesian merchant-draperies, and the early-modern Dutch (Leiden) merchant-draperies and English ‘clothiers’. Rather different were the late-medieval Flemish and Brabantine weaver-draperies: petty artisan-industrialists, who also functioned as master-weavers, even though employing other weavers to assist them, but who did not control the other key textile artisans -- the fullers, dyers, and shearers. These skilled craftsmen generally enjoyed their own independent guilds, for whom the weaver-draperies and cloth merchants were their fee-paying clients.<sup>54</sup>

In contrast, the late-medieval Italian *lanaiuoli* – if they were not the great ‘industrial capitalists’ misleadingly portrayed by Alfred Doren – exercised far greater economic and social control over the cloth industry and trade, in securing the wools and other raw materials, in organizing most of the cloth production, and in arranging for the sales of the finished cloths. In general, they subcontracted the preparatory production processes to various *fattori* or factors who themselves put out the textile ‘inputs’ to a variety of domestic workers and artisans. Thus, for example, the *lanaiuoli* employed *capodieci*, who were in charge of having the wools sorted and cleansed; the *fattore delle pettine* and the corresponding *fattore di cardo*, who supervised the putting-out and preparation of the combed and carded wools respectively; the *stamaiuoli* who put out the combed wools (*stame*) to the warp ‘rock’ spinners; and the *lanini* who put out the carded wools (*lana*) to the ‘wheel’ weft-spinners. Many of these industrial artisans were rural women – especially the spinners, though some combers and carders were urban and male (in northern Europe, as well); and they generally worked in their own homes, and always for piece-work wages. The *lanaiuoli* also employed, but under their own direct supervision, urban weavers and other textile artisans (who may have worked in *bottega*, if not in their own homes), who also earned piece-work wages, and whose direct subordination to the *lanaiuoli* and the *Arte della Lana*, can be further explained by the fact that this guild was a leader of the seven-member *Arti Maggiori*, which had long dominated the Florentine government.<sup>55</sup>

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<sup>54</sup> For industrial organization in the Low Countries’ draperies, see John Munro, ‘Gold, Guilds, and Government: The Impact of Monetary and Labour Policies on the Flemish Cloth Industry, 1390-1435’, *Jaarboek voor middeleeuwse geschiedenis*, 5 (2002), 153 - 205; Munro, ‘The Symbiosis of Towns and Textiles’, pp. 1-74; Munro, ‘Industrial Entrepreneurship in the Late-Medieval Low Countries’, pp. 377-88. The Flemish fullers are often regarded as employees of the weaver-draperies, in that they were less successful than the dyers and shearers in independently establishing the fees paid for each cloth fulled; and in 14<sup>th</sup>-century Ghent their guild became subordinate to the weaver-dominated urban governments. But that subordination of fullers was not found elsewhere, in north-western Europe.

<sup>55</sup> For the classic view of medieval ‘industrial capitalism’, see Doren, *Studien aus der Florentiner Wirtschaftsgeschichte*, Vol. I (see n. 20 above). For the modern view, see Florence Edler, *Glossary of Medieval Terms of Business: Italian Series, 1200-1600* (Cambridge, Mass., 1934); De Roover, ‘Florentine Firm of Cloth Manufacturers’, pp. 85-118, concerning the partnership of three merchants, all *lanaiuoli* of the *Arte della Lana*, who formed the firm of Raffaello di Francesco de’ Medici & Co, in February 1531. Perhaps

Some political events of the fourteenth-century reveal the current powers of the *Arte della Lana*.<sup>56</sup> In 1324 and again in 1338 the *Arte della Lana* forbade any subordinate artisans (*sottoposti*) of the *lanaiuoli*, or their employees, to organize their own guilds on penalty of complete expulsion from the industry, a dreaded fate known as the *divieto*. Subsequently, in 1342, a foreign adventurer, Walter de Brienne, known as the Duke of Athens, gained military control over Florence. Seeking popular support, he exploited the many grievances against the *Arte della Lana* by allowing the cloth-dyers and soap-makers to form their own combined and independent guild, the *Arti di Tintori e Saponai*. But it was abolished less than a year later, in August 1343, when the *Arte Maggiori* deposed Brienne and regained power. Undeterred, a group of male wool-carders and combers nevertheless continued to agitate for higher wages, and for the right to have their own guild — until the Florentine government hanged their leader, Ciuto Brandini, in May 1345. The government just as ruthlessly crushed the next strike, by cloth-dyers during the famine of August 1368, when the *Arte della Lana* imposed its dreaded *divieto* on rebellious textile artisans.

Just ten years later Florence and its cloth industry was subjected to the most famous revolutionary strife in later-medieval Italy: the famous ‘Revolt of the Ciompi’ (*Il Tumulto*).<sup>57</sup> The fundamental cause was on ongoing economic depression – widespread in western Europe during the 1370s – one that was especially severe for the Florentine cloth industry, producing considerable unemployment. But the proximate cause was surely the current reverses in Florence’s ruinous ‘War of the Eight Saints’ against the Papacy. When the Pope placed Florence under a papal interdict, in June 1378, pro-papal Guelphs attacked the pro-war governing Ghibellines, fomenting widespread violence; but they quickly suffered a brusque defeat. Then, in mid-July, a revolutionary mob, composed chiefly of cloth artisans, the so-called Ciompi, did succeed in overthrowing the Ghibelline government, replacing it with a new regime, temporarily led by an artisan named Michele di Lando (whom Gene Brucker describes as ‘a foreman in a cloth factory’).

The new regime also succeeded, by early August, in creating three new textile guilds, who were then admitted to the communal government in the form of the collective *Arte del Popolo di Dio*: the *Arte dei Tintori* (the dyers guild, which also included master carders and master fullers); the *Arte dei Farsettai* (shirt-makers guild, including master shearers); and the *Arte dei Popolo Minuto* (the Ciompi itself, by far the largest, with wool-beaters, and journeymen combers, carders, spinners, weavers and fullers). But soon the

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enjoying a quasi-independence were the fullers, often rural, either foot-fullers (with vats) or mechanical fullers (using water-powered fulling mills); but by the later-medieval era the *Arte della Lana* came to lease or own fulling-mills. The *lanaiuoli* paid the fullers piece-work wages, and then a fee to the guild for the use of the mills.

<sup>56</sup> For the following, see: Ferdinand Schevill, *History of Florence: from the Founding of the City through the Renaissance* (New York, 1936), pp. 194-309, 336-53; Marvin Becker, *Florence in Transition*, vol. II: *Studies in the Rise of the Territorial State* (Baltimore, 1968), pp. 93-149; Nicolai Rubinstein, ed., *Florentine Studies: Politics and Society in Renaissance Florence* (Evanston, 1968); Brian Pullen, *A History of Early Renaissance Italy, from the Mid-Thirteenth to the Mid-Fifteenth Century* (London, 1973), pp. 203-301.

<sup>57</sup> See also the collected studies: Eugenio Garin, ed., *Il Tumulto dei Ciompi: Un momento di storia fiorentina ed Europea* (Florence, 1981): Victor I. Rutenberg, ‘I Ciompi nel 1378’, pp. 1-12; John M. Najemy, ‘*Audiant Omnes Artes*: Corporate Origins of the Ciompi Revolution’, pp. 59-93, and Nicolai Rubinstein, ‘Il regime politico di Firenze dopo il Tumulto dei Ciompi’, pp. 105-24; Gene Brucker, ‘The Ciompi Revolution’, in Rubinstein, *Florentine Studies*, pp. 314-56 (quotation on p. 354); Niccolò Rodolico, *Il popolo minuto: note di storia fiorentina (1343-1378)*, new edn (Florence, 1968); Niccolò Rodolico, *I Ciompi: una pagina di storia del proletariato operaio*, new edn (Florence, 1980).

leaders of the *Ciampi* overplayed their hand by demanding even greater powers from what had seemed to be their own government. Exasperated by demands deemed to be excessive, the communal government quickly crushed the *Ciampi* and then abolished the *Arte dei Popolo Minuto*. The other two guilds had wisely sided with the government, to earn a temporary reprieve. But then, four years later, in 1382, another communal crisis led to the restoration of the old regime – i.e., the seven *Arti Maggiori*, including the *Arte della Lana* – which then abolished these remaining textile guilds. Thus ended the final challenge to the authority of the *lanaiuoli* and the *Arte della Lana*, who, however, proved unable to prevent the Florentine cloth industry's irredeemable decline.<sup>58</sup>

The extent of that decline may now be much better estimated. By 1373, according to most historians, the output of the Florentine cloth industry was about 30,000 woollens of standard measure.<sup>59</sup> When the *Ciampi* staged their revolt in 1378, they had demanded a guaranteed annual production of 24,000 cloths; and we may safely deduce that the annual production was less than that figure. According to both these historians, Florence's annual cloth production had fallen to about 19,000 woollens in 1382, when that 'counter-revolution' took place.<sup>60</sup> The almost contemporary and equally severe disruptions in Flemish cloth production, during the Second Artevelde Civil War of 1379-1385, and the crippling embargo that the Hanseatic League imposed on Bruges and the Flemish-Brabantine cloth trade in 1388-1392 (demanding reparations for damage during the civil war) do not seem to have provided the Florentine or other Italian cloth industries with the opportunity to fill the gaps left in European textile markets.<sup>61</sup>

### **Florentine cloth production in the fifteenth Century: the *San Martino* and *Garbo* branches**

According to Hoshino, the decline in production had become even more precipitous by the years 1425-30, when the annual output oscillated between 11,000 and 12,000 woollens; more recently Franceschi, supported by Chorley, has argued for an even lower figure: of about 9,000 - 10,000 pieces.<sup>62</sup> By this time, the Florentine woollen cloth industry had come to be divided into two sectors. The first was the older: the *San Martino* branch, which continued to manufacture very costly, ultra-luxury quality woollens exclusively from the very finest English wools – a requirement reiterated in an ordinance of the *Arte della Lana* of 1408.<sup>63</sup> The other was known as the *Garbo* branch, which produced medium or lower quality woollens, and much lower priced, essentially because the wools that they contained were so much cheaper.

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<sup>58</sup> See the sources in nn. 48-49.

<sup>59</sup> See n. 39 above for cloth measures.

<sup>60</sup> See Hoshino, *L'Arte della Lana*, Table XXVI, p. 227: providing a total of 19,296 pieces; Davidsohn, 'Blüte und Niedergang der Florentiner Tuchindustrie,' p. 250 (stating: 19,474 pieces in 1381-82); Franceschi, *Oltre il 'Tumulto'*, Table 2, p. 13 (also stating 19,296 pieces, and about 10,000 pieces in 1390).

<sup>61</sup> See Munro, 'Medieval Woollens: the Struggles for Markets', pp. 262-86; Munro, 'Symbiosis of Towns and Textiles', pp. 1-70.

<sup>62</sup> Hoshino, *L'Arte della Lana*, pp. 204-05; Franceschi, *Oltre il 'Tumulto'*, Table 2, p. 13: from 9,000 to 10,400 pieces in 1427, and from 9,130 to 10,967 pieces in 1430, but only 8,333 pieces in 1437; see Patrick Chorley, 'Rascie and the Florentine Cloth Industry during the Sixteenth Century', *The Journal of European Economic History*, 32:3 (Winter 2003), 487-526 (esp. p. 488).

<sup>63</sup> Hoshino, *L'Arte della Lana*, p. 208.



According to Ordinances of the *L'Arte della Lana* issued in 1428 and 1430, the so-called Garbo wools consisted of *San Matteo* or Spanish *merino*, wools from Majorca, Minorca, Provence, and also of Italy itself, the so-called *lana matricina*, especially those produced in the Abruzzi region (*lana abruzzese*): L'Aquila, Narni, Orvieto, Perugia, Terni e Viterbo. Hoshino's archival research for the period 1454-1480 reveals that these *matricina* or Abruzzi wools accounted for 71.8 percent of the wool purchases of 'numerous firms of the Florentine *lanaiuoli*' producing *panni di Garbo*, while Spanish wools came a distant second, accounting for 13.9 percent of wool purchases, and Provençal wools, third, with 12.3 percent of purchases.<sup>64</sup> His list of wool prices for 1454-1500 does indicate that those for *lana matricina* were generally, but not always, higher than those for *lana spagnola* (but far lower than those for *lana francesca*).<sup>65</sup> According to Goldthwaite, these *lana matricina* 'cost one-third to one-half less than English wool', in the mid fifteenth century.<sup>66</sup> In view of the considerable range of prices for the many varieties of Spanish *merino* wools, we may ask what varieties these Florentine firms were then purchasing. Finally, Hoshino also indicates that from the 1490s there was a marked increase in *il commercio diretto della lana castigliana*, i.e, with the now direct participation of Spanish merchants.<sup>67</sup> Certainly during the sixteenth century, the now considerably improved and thus more valuable *merino* wools came to play a much larger role in the Florentine woollens industry.

For the mid-fifteenth century Florentine cloth industry, we should also inquire about the markets that the Florentine *lanaiuoli* were primarily serving: were they local markets, and for the lower income strata of Tuscan towns; or were they foreign markets (and especially Levantine)? As stated earlier, cloth-manufacturing was a virtually ubiquitous industry across late-medieval western Europe. Most of that production, everywhere, was to supply the needs of local, domestic markets, and for the lower-income strata. Thus, such cloths were generally always produced from cheaper, local wools. Manufacturing for long-distance export markets was, of course, an entirely different matter: and obviously only the English and Catalans relied chiefly on their own high-quality wools for that purpose. De Roover comments that the *lanaiuoli di Garbo* were, as already noted 'not permitted to use English wool', but, he clearly states, 'neither were they supposed to use Italian wool, which was of such inferior quality that its use was prohibited with the city limits of Florence'.<sup>68</sup> Obviously any such prohibition was a limited one; and elsewhere such a

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<sup>64</sup> Hoshino, *L'Arte della Lana*, pp. 210-11; 233-36; p. 279, and Table LVIII, p. 302; but of those acquired by non-Florentines, there were 80 bales of Spanish wools, vs. 46 bales of *matricina bigia*, and 28 bales of *matricina fine*. Certainly Hoshino confirms the use of Spanish wools in the Florentine production of the *panni di Garbo*: 'È certo che a Firenze era utilizzara anche la lana spagnola di varie provenienze per la fabbricazione dei panni di Garbo. [But] La quantità importato però non era tanto rilevante ripsetto a quella della lana abruzzese...' (p. 279).

<sup>65</sup> Hoshino, *L'Arte della Lana*, Table LVII, p. 299.

<sup>66</sup> Richard Goldthwaite, 'The Florentine Wool Industry in the Late Sixteenth Century: a Case Study', *The Journal of European Economic History*, 32:3 (Winter 2003), 527-54.

<sup>67</sup> Hoshino, *L'Arte della Lana*, p. 281. On this point, see also Goldthwaite, 'Florentine Wool Industry', pp. 534-35. For the use of Spanish wools in the Medici's Florentine woollen workshops in the mid sixteenth century, see de Roover, 'A Florentine Firm of Cloth Manufacturers', pp. 85-118, esp. p. 101, Appendix I, p. 113.

<sup>68</sup> De Roover, 'A Florentine Firm of Cloth Manufacturers', p. 101. His reference is to the mid sixteenth century, when, he contends the 'Medici bought chiefly Spanish wool of high quality', though they also used some Provençal wools, 'which was inferior to the Spanish wool...'. Cf. also Mazzaoui, *Cotton Industry*, p. 216, n. 11, who states that medieval 'Florence also produced a range of cheaper fabrics made

prohibition against using local wools pertained only to regulated and sealed woollens for export, as was certainly the case in the late-medieval Low Countries.<sup>69</sup>

It is important to note that, from the late 1420s, many *nouvelles draperies* in the southern Low Countries had begun to switch to Spanish *merino* wools, though often mixed with some English wools, because the costs of the latter had again sharply risen, with the Crown's imposition of the onerous Calais Staple Bullion and Partition Ordinances (which did not affect wools sent to Italy by sea routes).<sup>70</sup> Despite the drastic decline that the more traditional urban draperies (Ghent, Ypres, Bruges, Mechelen, Brussels, Leuven) soon suffered a steep decline in their sales and woollen cloth outputs (reflected in the equally sharp fall of English wool exports), they all refused to make such switch to *merino* wools, not finally until the sixteenth century, for fear of ruining their reputation for producing luxury-quality woollens.<sup>71</sup> Certainly the *merino* wools of the early to mid-fifteenth century were still inferior to most English wools from the Calais Staple, but not inferior to Scottish and the domestic wools of the Low Countries. Furthermore, there is absolutely no evidence that any Italian wools were being used in any of the northwest European draperies;<sup>72</sup> and if the Abruzzi *matricina* wools were of such *buona qualità*, one may wonder why they not so used – if in fact they were of the requisite short-stapled fineness?

According to both Hoshino and Chorley, the partial revival of the Florentine woollen cloth industry, from the mid fifteenth century, was largely based on two factors: its success in gaining access to Levantine and especially Ottoman Turkish textile markets; and especially the success of its cheaper-line *panni de Levante* manufactured from Garbo wools, which Chorley indicates (or assumes) were largely Spanish. In the 1470s, according to Chorley, Florentine cloth exports to the Levant and the Ottoman Empire amounted to 7,000 - 8,000 pieces a year.<sup>73</sup> From Venetian reports dated 1488, Hoshino has estimated that Florentine cloth

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from low-grade domestic or imported wools'.

<sup>69</sup> Munro, 'Spanish *Merino* Wools', pp. 431-84; Walter Endrei and Geoffrey Egan, 'The Sealing of Cloth in Europe, With Special Reference to the English Evidence', *Textile History*, 13 (Spring 1982), 47-76.

<sup>70</sup> These ordinances, by the 1429 act of Parliament (8 Hen. VI, c.24), required the Staple to raise wool prices, exact full payment in cash (i.e., forbidding any credit sales), one third of which was to be in gold bullion, delivered to the Calais mint. They were not formally revoked until 1473. See John Munro, *Wool, Cloth and Gold: The Struggle for Bullion in Anglo-Burgundian Trade, ca. 1340-1478* (Brussels and Toronto, 1973), pp. 93-179; Munro, 'Symbiosis of Towns and Textiles', pp. 1-74; Munro, 'Spanish *Merino* Wools', pp. 455-76.

<sup>71</sup> English 'denizen' wool exports [to Calais] fell from a mean of 13,363.60 sacks in 1421-25 to 5,246.80 sacks in 1456-60. See Table 1, and Munro, 'Medieval Woollens: the Struggle for Markets', pp. 286-91, and Tables 5.3 (wool exports), pp. 304-05, and Table 5.5 (production indices for the Low Countries' draperies), pp. 308-09.

<sup>72</sup> Munro, 'Spanish Wools', pp. 455-76. In the 1440s, however, Brussels did permit the establishment of its own separate *nouvelle draperie* using Spanish and Scottish wools, provided that it did not use English wools.

<sup>73</sup> See Hidetoshi Hoshino, *Industria tessile e commercio internazionale nella Firenze del tardo Medioevo*, ed. by Franco Franceschi and Sergio Tognetti, Biblioteca storica toscana no. 39 (Florence: Leo S. Olschki, 2001); Hoshino, *L'Arte della Lana*, pp. 267-75; Hidetoshi Hoshino and Maureen Mazzaoui, 'Ottoman Markets for Florentine Woollen Cloth in the Late Fifteenth Century,' *International Journal of*

production was now about 17,000 pieces a year – a significant recovery – about two thirds of which were made from Garbo wools (*panni di Garbo*).<sup>74</sup> Chorley contends in particular that Florentine cloth exports to the Levant was to a large extent based on an exchange trade: ‘the import of raw Iranian [Persian] silk for the growing Florentine silk industry, which also had significant exports to the Levant’.<sup>75</sup> As he also reminds us, we should take greater account of the role that a rising consumption of silk textiles played in the relative decline of the ultra-luxury woollens trade, especially from the mid-fifteenth century.

### **Macro-economic factors and falling transaction costs: expansion and change in the international textile trades from the 1460s**

We should also consider the role of demographic and other macro-economic factors in both the recovery and expansion of Florentine cloth production, but especially the increasing share of that production in the relatively cheaper *panni di Garbo*. In the first place, the recovery in Italy’s population, and then that of the Mediterranean basin, which occurred much earlier and more rapidly than in northwestern Europe (where demographic recovery did not begin until the 1520s), expanded both the size of consumer markets and the potential labour force within the Italian textile industries. By the 1520s, the population of Florence had recovered to about 80,000 (i.e., about double that of 1427).<sup>76</sup>

Second, accompanying and undoubtedly stimulating that combined economic and demographic recovery was the South-German-Central European silver-copper mining boom, which, from the 1460s to the 1530s, quintupled the European production of silver, and not only brought to an end the severe deflation of the mid-fifteenth century but also provided the origins of the Price Revolution from about 1515 (with other financial developments, discussed below): a sustained inflation, lasting until the 1640s, that provided a strong stimulus to economic expansion, especially in reducing the real costs of labour and borrowed capital.<sup>77</sup>

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*Turkish Studies*, 3 (1985-86), 17-3; Chorley, ‘Rascie and the Florentine Cloth Industry’, pp. 488-9: ‘middling quality cloths from Spanish-made wool by the second of the two branches .... the Garbo’. Cf also Mazzaoui, *Cotton Industry*, p. 216, n. 11, who also states that ‘“panni di Garbo” referred to second-quality fabrics made from Spanish wool’.

<sup>74</sup> Hoshino, *L’Arte della Lana*, pp.239-44: estimating 4,286 San Martino woollens (from English wools) and 12,858 Garbo woollens.

<sup>75</sup> Chorley, ‘Rascie and the Florentine Cloth Industry’, p. 489; Hoshino, *L’Arte della Lana*, pp. 268-75.

<sup>76</sup> Chorley, ‘Rascie and the Florentine Cloth Industry’, p. 494. But he also notes that the plague and demographic crisis of 1526-30 reduced the population by about 25 percent, ‘and it took several decades to recover’.

<sup>77</sup> Since neither wages nor interest rates rose as fast as commodity and retail prices, inflation cheapened their relative costs for producers. See John Munro, ‘The Central European Mining Boom, Mint Outputs, and Prices in the Low Countries and England, 1450 - 1550’, in Eddy H.G. Van Cauwenberghe, ed., *Money, Coins, and Commerce: Essays in the Monetary History of Asia and Europe (From Antiquity to Modern Times)*, Studies in Social and Economic History (Leuven, 1991), pp. 119 - 83; John Munro, ‘The Monetary Origins of the “Price Revolution:” South German Silver Mining, Merchant-Banking, and Venetian Commerce, 1470-1540’, in Dennis Flynn, Arturo Giráldez, and Richard von Glahn, eds., *Global Connections and Monetary History, 1470 - 1800* (Aldershot and Brookfield, 2003), pp. 1-34; John Munro, ‘The Price Revolution’, in Steven N. Durlauf and Lawrence E. Blume, eds., *The New Palgrave Dictionary of*

Much of that newly mined South German silver and copper allowed Venice in particular greatly to expand its commerce with the Levant, bringing back larger quantities of Syrian cotton to furnish the now rapidly expanding fustians industry of South Germany.<sup>78</sup>

The related development, of even greater importance, was the revival of long-distance overland or continental trade routes, now chiefly running from Venice through South Germany to the Frankfurt Fairs, and then along the Rhine to the new Brabant Fairs, whose expansion helped to make Antwerp the commercial and financial capital of northern Europe, from the 1460s to 1560s. As Van der Wee and others have amply demonstrated, these overland, continental trade routes (less than twenty percent of the distance by sea) had a far greater economic stimulus in expanding international trade than did the late-medieval maritime routes: in increasing capital investment, production, employment, and aggregate regional incomes, by a combined multiplier-accelerator effect, affecting a vastly greater geographic areas and hundreds of more towns.<sup>79</sup> That overland continental trade, furthermore, led to the revival of the large-scale international fairs, as a very major force in the expansion of European international trade, though with locations entirely different from those of the thirteenth century: not only in the new fairs of Frankfurt and Brabant (Antwerp and Bergen-op-Zoom) but also in Bescançon, Geneva, and Lyons.<sup>80</sup>

In more general macro-economic terms, these combined demographic-economic forces for expansion, greatly aided by a relative diminution in warfare, with the end of the Hundred Years' War in particular (1453), fully reversed the contractionary forces of the fourteenth-century, indeed to restore the far more propitious and expansionary economic forces of the thirteenth-century 'Commercial Revolution' era. In so doing, they also produced a very significant reduction in transaction costs in international trade – all the more so when we realize how dependent cost reductions in the transaction sector were based on enlarged scale economies, i.e, with much larger, more concentrated, and more efficient urban markets.

Those cost reductions were aided by significant technological advances in transportation and communications. In maritime commerce, by far the most important was the development, from the 1450s, of the fully-rigged, three-masted, and heavily-armed 'Atlantic' ships (with combined square and lateen sails), especially the carracks and galleons, which, according to Frederic Lane led to a 25 percent reduction in shipping costs, including implicit insurance costs, with much greater safety, by the early sixteenth century.

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*Economics*, 2<sup>nd</sup> edition, 6 vols. (London and New York: Palgrave Macmillan, forthcoming).

<sup>78</sup> See sources in the previous note, and also: John Munro, 'South German Silver, European Textiles, and Venetian Trade with the Levant and Ottoman Empire, c. 1370 to c. 1720: A Non-mercantilist Approach to the Balance of Payments Problem', in Simonetta Cavaciocchi, ed., *Relazione economiche tra Europa e mondo islamico, secoli XIII - XVIII*, Atti delle "Settimana di Studi" e altri convegni, no. 38, Istituto Internazionale di Storia Economica "Francesco Datini" (Florence: Le Monnier, 2007), forthcoming.

<sup>79</sup> See Herman Van der Wee, Herman, 'Structural Changes in European Long-Distance Trade, and Particularly in the Re-export Trade from South to North, 1350-1750', in James Tracy, ed., *The Rise of Merchant Empires: Long-Distance Trade in the Early Modern World, 1350-1750* (Cambridge, 1990), pp. 14-33; Van der Wee and Peeters, 'Un modèle dynamique de croissance interseculaire du commerce mondiale', pp. 100-28.

<sup>80</sup> See sources in n. 66, and Munro, 'The Textile Trades, Warfare, and Transaction Costs', pp. 1-47; John Munro, 'The Low Countries' Export Trade in Textiles with the Mediterranean Basin, 1200-1600', pp. 1 - 30.

These ships allowed Europeans to dominate the world's shipping lanes for the next four centuries.<sup>81</sup> Equally important were innovations in overland, continental trade: especially, the establishment of professional, specialized cartage firms, which used the new, larger-scale, lower-cost Hesse wagons (carts), in well organized convoys. These firms offered merchants fully insured passage for their goods at predetermined, fixed rates, with reliable travel schedules; and they also provided an efficient overland postal service. They soon made the continental overland routes both speedier and more reliable than Atlantic shipping routes from north-west Europe into the Mediterranean.<sup>82</sup> To these may be added the subsequent 'financial revolution' in the development of fully negotiable credit instruments, in both private and public finance (*rentes*), and financial exchanges, from the 1520s, which contributed to a fifty-percent reduction in real interest rates by the mid-sixteenth century.<sup>83</sup>

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<sup>81</sup> Frederic Lane, *Venetian Ships and Shipbuilders of the Renaissance* (Baltimore, 1934), pp. 26-28; Richard Unger, *The Ship in the Medieval Economy, 600-1600* (London and Montreal, 1980), pp. 201-50; Richard Unger, 'Warships and Cargo Ships in Medieval Europe,' *Technology and Culture*, 22 (April 1981), 233 - 52; Carlo Cipolla, *Guns, Sails and Empires: Technological Innovation and the Early Phases of European Expansion, 1400-1700* (New York, 1965), pp. 90-131; Martin Elbl, 'The Caravel and the Galleon,' in Robert Gardiner, ed., *Conway's History of the Ship, III: Cogs, Caravels and Galleons* (London, 1994), pp. 91-98. See also Russell Menard, 'Transport Costs and Long-Range Trade, 1300 - 1800: Was There a European 'Transport Revolution' in the Early Modern Era?' in James Tracy, ed., *The Political Economy of Merchant Empires: State Power and World Trade, 1350 - 1750* (Cambridge, 1991), pp. 228 - 75.

<sup>82</sup> The chief hindrance to long-distance maritime commerce was the inability to calculate longitude, thus requiring mariners to follow the far longer distance coastal routes. For the evidence on lower transport and transaction costs, see the following: Herman Van der Wee, *Growth of the Antwerp Market and the European Economy, 14th to 16th Centuries*, 3 vols. (The Hague, 1963), vol. II, pp. 177-94, 325-64; Herman Van der Wee and Jan Materné, 'Antwerp as a World Market in the Sixteenth and Seventeenth Centuries,' in J. Van der Stock, ed., *Antwerp: Story of a Metropolis, 16th- 17th Century* (Gent, 1993), pp. 19-31; Van der Wee, 'Structural Changes in European Long Distance Trade', pp. 14-33; Munro, 'The Textile Trades, Warfare, and Transaction Costs', pp. 1-47; Wilfrid Brulez, 'L'exportation des Pays Bas vers l'Italie par voie de terre au milieu du XVIe siècle,' *Annales: ESC*, 14:3 (Jul-Sept 1959), 461-91; Wilfrid Brulez, 'Le commerce international des Pays-Bas au XVI siècle: essai d'appréciation quantitative,' *Revue belge de philologie et d'histoire*, 46 (1968), 1205-21; republished as 'The Balance of Trade of the Netherlands in the Middle of the 16<sup>th</sup> Century', *Acta historiae neerlandica: Historical studies in the Netherlands*, 4 (Leiden, 1970), 20-48; Wilfrid Brulez, *De firma Della Faille en de internationale handel van Vlaamse Firma's in de 16 eeuw* (Brussels, 1959); Florence Edler, 'Le commerce d'exportation des sayes d'Hondschoote vers Italie d'après la correspondance d'une firme anversoise, entre 1538 et 1544,' *Revue du Nord*, 22 (1936), 249-65. Also to be added are the development of specialized 'commission houses' in international trade, of printed daily commercial newspapers, with commodity prices and exchange rates, etc. See: John McCusker and Cora Gravesteijn, *The Beginnings of Commercial and Financial Journalism: The Commodity Price Currents, Exchange Rate Currents, and Money Currents of Early Modern Europe*, NEHA-Series III (Amsterdam, 1991).

<sup>83</sup> See Van der Wee, Herman, 'Anvers et les innovations de la technique financière aux XVIe et XVIIe siècles', *Annales: E.S.C.*, 22 (1967), 1067-89, republished as 'Antwerp and the New Financial Methods of the 16th and 17th Centuries', in Herman Van der Wee, *The Low Countries in the Early Modern World*, trans. by Lizabeth Fackelman, Variorum Series (Aldershot, 1993), pp. 145-66; Van der Wee, Herman, 'Monetary, Credit, and Banking Systems,' in E.E. Rich and Charles Wilson, eds., *The Cambridge Economic History of Europe, Vol. V: The Economic Organization of Early Modern Europe* (Cambridge,

Just as the late-medieval forces for economic contraction and disruption, in raising transaction costs, had so seriously hindered long-distance trade in the cheaper line textiles, so the reversal of these forces and the significant reduction in transaction costs promoted a renewed emphasis and greater relative importance of long-distance trade in those cheaper-line textiles: such as the *panni di Garbo* and South German fustians, already mentioned. In the Low Countries those structural changes brought about the revival and significant expansion of the Hondschoote-style *sayetteries* and other *draperies légères*, which, by the early sixteenth century, had displaced both the traditional woollen *draperies de luxe* and the so-called *nouvelles draperies* to become decisively the leading textile industry of the southern Low Countries.<sup>84</sup> Most of these were, like the thirteenth-century Hondschoote says (*saies, saaien*), a semi-worsted serge: with a long-stapled worsted (combed) dry warp and a short-stapled (carded) greased weft. They were far lighter and far cheaper than traditional woollen broadcloths (as noted earlier), though not as cheap and light as pure worsteds. As was the case in the thirteenth century, so the major market for the product of Low Countries' *sayetteries* proved to be Italy, the Mediterranean basin in general, and then the Spanish colonies in the Americas.<sup>85</sup>

As Hoshino notes, the *Arte della Lana* attempted, with varying degrees of success, to re-introduce the production of similar lighter-weight semi-worsted fabrics in the second half of the fifteenth century: *panni perignani* ('leggera stoffa di lana', using Spanish wools for the weft); *saie a ucellini*; and, ultimately, the most important, *panni di rascia* – or 'rascie' – known as 'rashes' in English, introduced by an ordinance of February 1488, a serge cloth that also used Spanish wools for its carded wefts.<sup>86</sup> But, as Chorley has recently revealed its greatest importance, came in the sixteenth century, especially between the years from c. 1520 to

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1977), pp. 290-392; John H. Munro, 'The Medieval Origins of the Financial Revolution: Usury, *Rentes*, and Negotiability', *The International History Review*, 25:3 (September 2003), 505-62.

<sup>84</sup> See Emile Coornaert, *La draperie-sayetterie d'Hondschoote, XIVe-XVIIIe siècles* (Paris, 1930); Emile Coornaert, *Une industrie urbaine du XIVe au XVIIe siècle: l'industrie de la laine à Bergues-Saint-Winoc* (Paris, 1930); Emile Coornaert, 'Draperies rurales, draperies urbaines: l'évolution de l'industrie flamande au moyenâge et au XVI siècle', *Belgische tijdschrift voor filologie en geschiedenis/Revue belge de philologie et d'histoire*, 28 (1950), 60-96; Florence Edler, 'Le commerce d'exportation des sayes d'Hondschoote vers Italie d'après la correspondance d'une firme anversoise, entre 1538 et 1544', *Revue du Nord*, 22 (1936), 249-65; Herman Van der Wee (with John Munro), 'The Western European Woollen Industries, 1500-1700', in David Jenkins, ed., *The Cambridge History of Western Textiles* (Cambridge and New York, 2003), pp. 439-58; Munro, 'The Origins of the English New Draperies', pp. 35-127.

<sup>85</sup> In the 1560s, the production of woollen cloths from the *nouvelles draperies* and the very few remaining traditional draperies in the southern Low Countries was then about 2.07 million metres, while output from the various *sayetteries* and other *draperies légères* (*sèches*) was 3.64 million metres, i.e., about 76 percent greater. See Hugo Soly and Alfons Thijs, 'Nijverheid in de zuidelijke Nederlanden', in J.A. Van Houtte, et al., eds., *Algemene geschiedenis der Nederlanden*, 12 vols. (Haarlem, 1977-1979), Vol. 6, pp. 27-57. See also Van der Wee, 'Western European Woollen Industries, 1500-1700', pp. 439-58; Munro, 'The Origins of the English New Draperies', pp. 35-127; Munro, 'The Textile Trades, Warfare, and Transaction Costs', pp. 1-47; Leo Noordegraaf, 'The New Draperies in the Northern Netherlands, 1500-1800', in Negley Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10 (Oxford and New York, 1997), pp. 173-95. See also n. 94, below.

<sup>86</sup> Hoshino, *Arte della Lana*, pp. 235-39; Hoshino, *Industria tessile e commercio*: collected studies.

c. 1570.<sup>87</sup> They came to enjoy an important prominence on Antwerp market by the mid-sixteenth century, when both the ‘large’ (broad) and ‘narrow’ were amongst the most valuable cloths sold there.<sup>88</sup>

Such developments in the early-modern Florentine cloth industry do not mean, however, that the ultra-luxury San Martino woollens, still woven from those very fine English wools, had lost their importance from the mid-fifteenth century. Though far fewer were now being exported to the Levant, they continued to enjoy a far strong prominence in Italian and especially Papal markets. Thus, of the woollens imported into Rome in the years 1451-76, the Florentine cloths accounted for 13,528 or virtually half (49.72 percent) of the total 27,210 cloths sold there; and of these Florentine woollens, 5,354 (39.58 percent) were the extremely costly ‘grain’ or kermes-dyed scarlets (*panni di grana*). In contrast, only 821 English broadcloths and 805 Flemish woollens were then sold in Rome.<sup>89</sup>

### **The (temporary) decline of Florentine cloth production and the rise of Venetian cloth production in the sixteenth century**

Regrettably, Hoshino’s famous study of the Florentine industry does not extend beyond the 1490s; but subsequently Paolo Malanima did provide a useful survey of the Florentine cloth industry’s changing fortunes in the sixteenth and seventeenth centuries.<sup>90</sup> More recently, however, in two important papers, Patrick Chorley has recently demonstrated that this industry reached its apogee in the late 1520s, with an output of about 20,000 pieces of woollen cloth, perhaps double that of a century earlier: about 25 percent (4,000 to 5,000 woollens) produced by the San Martino branch, but accounting for about half of the industry’s

<sup>87</sup> Chorley, ‘Rascie and the Florentine Cloth Industry’, pp. 487-526. He describes them as a ‘fine species of cloth serge ... They fell into the category of woollens in that they were [fulled and] felted’; they were woven from ‘a combed, drop-spun warp and a carded wheel-spun weft’; but he does not indicate the staple-length of the warp fibres. See also the companion article: Goldthwaite, ‘Florentine Wool Industry’, pp. 527-53. In the Letters Patent of July 1578, for the ‘Grant of the office of the Aulngaer of the New Draperies’, ‘Rasses’ or ‘Staminetts’ are classed as worsted stuffs with a combed worsted warp and a carded woollen weft. But their weight per square yard is considerably higher than those of other textiles of this class: 1.16 lb, vs. 0.59 lb. for Flemish says, 0.42 lb for Naples fustians, 0.46 lb. for English single Bays, and 0.65 lb. for English double Bays. See N.J. Williams, ‘Two Documents Concerning the New Draperies’, *Economic History Review*, 2<sup>nd</sup> ser., 4:3 (1952), 353-58; and Abbott Payton Usher, *Industrial History of England* (New York, 1920), pp. 200-01.

<sup>88</sup> See Alfons Thijs, ‘Les textiles au marché anversoïis au XVI<sup>e</sup> siècle,’ in Erik Aerts and John Munro, eds., *Textiles of the Low Countries in European Economic History*, Proceedings of the Tenth International Economic History Congress, Studies in Social and Economic History, Vol. 19 (Leuven, 1990), pp. 76-86: ranging from 132d-192d per ell for the narrow, and 252d to 324 d per ell for the large (broad), compared to 480d per ell for English ‘Coggeshall *fin fin*, and 240d per ell for Mechelen’s ‘golden eagle’ (*vergulden arent*) broadcloths. Thijs classes these ‘ras’ or ‘rashes’ as products of the *draperie légères* (p. 84), as does Usher (n. 73 above). Double *saies* of Hondschoote, in contrast, cost only 20d - 22d per ell (1 Flemish ell = 0.70 metre).

<sup>89</sup> Hoshino, *Arte della Lana*, Tables XLII-XLIII, pp. 286-87.

<sup>90</sup> Paolo Malanima, ‘An Example of Industrial Reconversion: Tuscany in the Sixteenth and Seventeenth Centuries’, in Herman Van der Wee, ed., *The Rise and Decline of Urban Industries in Italy and the Low Countries (Late Middle Ages - Early Modern Times)* (Leuven: Leuven University Press, 1988), pp. 63-74. See also: Hoshino, *Industria tessile e commercio*: collected studies.

revenue, estimated at 600,000 florins; and the rest, therefore, by the Garbo branch of the Florentine industry.<sup>91</sup>

To explain the sudden decline of the traditional Florentine woollen industries from ca. 1530, Chorley cites two major factors. The first, and most important, was the loss of its dominance in the Levantine markets, beginning with a ‘disruption in the trade in Iranian [raw] silk’ from an embargo that the Ottoman Sultan Selim I had imposed in the years 1514-20, leading to a shift in the silk transit trade from Bursa (Constantinople) to Aleppo, where the Florentines ‘had no established presence’, but where the Venetians certainly did. For some Florentine firms the Turkish share of their exports fell from a high of 42 percent, in 1518-32, to 13 percent in 1544. The second was Florence’s own internal crisis of the years 1526-30, when bubonic plague killed perhaps a quarter of the population; and at almost the same time, the Spanish-German sack of Rome in 1527, threatening the expulsion of the Medici Pope Clement VII, led to a revolution against Medici rule in Florence, which was finally and brutally crushed by Papal forces in August 1530.<sup>92</sup>

By far the most dramatic development in the history of the Italian textile industries in the sixteenth century was Venice’s rapid and almost total displacement of Florence as a producer and exporter of fine, heavy-weight woollen broadcloths in the Levant – and more generally in the Ottoman Empire, which, of course included most of the Balkans, as well as Asia Minor, and then all of the Mamlūk domains, from the Ottoman conquests of 1516-17. Thanks to the researches of several Italian scholars, Pierre [Piero] Sardella, Domenico Sella, and Walter Panciera, we now possess a remarkable annual series of Venetian woollen cloth production statistics from 1516 to 1723, just over 200 years.<sup>93</sup> The Venetian story is all the more remarkable because, prior to the very late fifteenth century, Venice had never maintained a cloth industry of any international importance. From the earliest recorded output, in 1516, to the first peak, in 1569, production grew from a mere 1,310 pieces to 26,541 pieces.

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<sup>91</sup> Patrick Chorley, ‘The Volume of Cloth Production in Florence, 1500-1650: An Assessment of the Evidence’, in Giovanni Luigi Fontana and Gérard Gayot, eds., *Wool: Products and Markets (13<sup>th</sup> - 20<sup>th</sup> Century)* (Padua, 2004), pp. 551-72; Chorley, ‘Rascie and the Florentine Cloth Industry’, pp. 487-89, and Appendix One, pp. 515-19. For the important role that the Italian Adriatic port of Ancona played in marketing Florentine woollens, at least until the 1520s, to the Ottoman Empire, see Peter Earle, ‘The Commercial Development of Ancona, 1479-1551’, *Economic History Review*, 2<sup>nd</sup> ser., 22:1 (April 1969), 28-44.

<sup>92</sup> Chorley, ‘Rascie and the Florentine Cloth Industry’, pp. 487-91; A.J. Grant, *History of Europe from 1494 to 1610*, 5<sup>th</sup> edn. (New York, 1951), pp. 136-42, 204-05. See also Earle, ‘Commercial Development of Ancona’, p. 37, for further evidence on the sharp decline of Florentine cloth sales, from the 1520s, and the growing influx of English woollens (Winchcombe kerseys, *panni di Londra*, and *ultrafini* – probably Suffolk ultrafine broadcloths.)

<sup>93</sup> The sixteenth-century statistics (1516-1605) were first published in Pierre Sardella, ‘L’Épanouissement industriel de Venise au XVI<sup>e</sup> siècle: Un beau texte inédit’, *Annales: Économies, sociétés, civilisations*, 2:3 (April-June 1947), 195-96; most of the rest of the data, to 1713, were published in Sella, ‘Rise and Fall of the Venetian Woollen Industry’, 29 - 45. However, this still very well known series contains a number of statistical errors, which have now been largely corrected in: Walter Panciera, *L’Arte matrice: I lanifici della Repubblica di Venezia nei secoli XVII e XVIII*, Studi veneti, no. 5 (Treviso: Fondazione Benetton Studi Ricerche and Canova Editrice, 1996), Table 2, pp. 42-43, which also extends Sella’s series from 1713 to 1723. I wish to offer my sincere thanks to Professor Panciera, who sent me a photo-copy of the document from the Venetian archives (ASCW, *Cinque savi* b. 476) containing the original data. Unfortunately, in using this archival document, I found it necessary to correct his statistics for the following four years: 1521, 1618, 1639, and 1662. The dimensions of these woollens are not given.



In Sella's view, the primary reason for the initial rise of the Venetian woollen cloth industry, and for its ability to displace the Florentine industry so decisively, was warfare: the French and Habsburg invasions, from 1494 to 1559 (Treaty of Cateau-Cambrésis), which ravaged Lombardy and Tuscany, but left Venice, in his view, with its supposedly protected location and extensive military power, relatively untouched.<sup>94</sup> Unfortunately, however, that view is not consistent with the facts of Italy's military history in this period. For, in December 1508, Venice faced the newly formed League of Cambrai, a seemingly invincible coalition of very hostile and very formidable enemies who together posed the greatest threat to Venice's existence since the War of Chioggia (with Genoa, 1378-81): the Holy Roman Emperor (Maximilian), France (Louis XII), the Papacy (Pope Julius II), and the King of Hungary. Their objective was to recapture Venice's recent Italian acquisitions, outside her traditional her traditional 'Venetia' jurisdiction. In May 1509, at the Battle of Agnadello (on the Adda), the French- led army utterly defeated the Venetians, who were forced to abandon the entire mainland. Although this coalition soon dissolved, rent by conflicting rivalries, Venice – now stripped of her papal territories – found herself again at war with the French, who again defeated the Venetians, at the Battle of Marignano, in September 1513. But, fortunately Venice was spared further losses by the Concordat of Bologna in 1516; and indeed, Venice regained Padua, and some other mainland territories.<sup>95</sup> These often disastrous may explain why the very first recorded output, in that same year – just 1,310 pieces in 1516 – was so very small.

Instead, the far more convincing explanation for Venice's subsequent and ultimate victory in gaining the Ottoman cloth markets lies in the two major difficulties revealed in Chorley's analysis, recounted above: those that the Florentine cloth trade were encountering in the Ottoman Empire, from about 1514, and then those that Florence experienced in its severe domestic crisis in the years 1526 to 1530.<sup>96</sup> Furthermore, it is important to note that Florentine cloth production had achieved its apogee, in the mid-1520s – thus some thirty years after Charles VIII's French invasion of Italy (in 1494).

To be sure, the Venetians proved to be less successful in exploiting commercial opportunities in the now vast Ottoman Empire than they had been in their diplomatic and commercial relations with the former Mamlūk Sultanate (the Levant), which had fallen to the Ottomans in 1517. Even before then, they had found themselves at war with the Turks, far too often: especially in the years 1463-79, and 1499-1503, when the Venetians had suffered a crucial naval defeat at the Battle of Zoncio. During that latter period, the Portuguese had established their direct sea route, via southern Africa (the Cape), to the Indies, thereby threatening Venice with the loss of her vital spice trade. Nevertheless, in the Ottoman peace treaty of 1503, the Venetians recognized that their only hope of regaining that spice trade lay in co-operating with the Ottomans, who – in a triple Muslim alliance with Gujerat in India and Aceh (Atjeh) in Sumatra -- succeeded in breaking the Portuguese hold over the Indian ocean trades, including the spice trade. Thus, by the 1540s, the Venetians had managed to regain a significant share of the lucrative East Indies spice trade – perhaps as much as half

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<sup>94</sup> See Sella, 'Rise and Fall', pp. 113-115: 'Safe from direct war damage, unaffected by domestic strife, ready to welcome refugees from the troubled Italian mainland, still in full control of a commercial network that reached deep into eastern Mediterranean countries, Venice found her own fortune in the very crisis then sweeping the Italian peninsula. As the traditional Italian sources of supply ran dry, the Venetians stepped in to fill the vacuum'.

<sup>95</sup> Grant, *History of Europe*, pp. 52-54, 65-69; Frederic Lane, *Venice: A Maritime Republic* (Baltimore and London, 1973), pp. 242-45.

<sup>96</sup> See also Earle, 'Commercial Development of Ancona', p. 37, for further evidence on the sharp decline of Florentine cloth sales, from the 1520s, and the growing influx of English woollens (Winchcombe kerseys, *panni di Londra*, and *ultrafini* – probably Suffolk ultrafine broadcloths.)

by the 1550s – allowing them, with their new cloth export trade to the Ottoman Empire, to enjoy an Indian Summer of renewed prosperity to the late sixteenth century.<sup>97</sup>

Indeed, the Venetian cloth industry's mean annual production had not exceeded 10,000 pieces until 1546-50; and thus the much more rapid growth of output to the quinquennium 1566-70, when cloth production reached a temporary peak of 18,513 pieces, may have been related to Venice's ability to restore at least part of its former spice trade, via Ottoman ports: i.e., in effect exchanging woollens for at least some spices. But in the year 1570, production had slumped to just 9,462 pieces, a sharp drop undoubtedly related to the Ottoman seizure of Cyprus. Thereafter, cloth production did recover, at a much slower rate of annual growth, with a series of often severe oscillations. That diminished growth rate may in turn reflect the revival of Lombard and Tuscan cloth production, after the 1559 Peace of Cateau-Cambrésis; for, we do know that Florence, also selling woollens in Levantine markets, had more than doubled its production after 1558: from 16,000 pieces to about 33,000 pieces in 1561.<sup>98</sup> Venetian cloth production itself reached its ultimate peak, of 28,728 pieces, in 1602 – or with a quinquennial mean production of 23,573 pieces in 1601-05, and thus 27.3 percent higher than the earlier sixteenth century peak.<sup>99</sup>

From evidence on Venetian cloth widths these appear to be genuine heavy-weight woollen broadcloths: 1.80 metres compared to 1.60 metres for the English. Such woollens had been, from some time much earlier in the sixteenth century, manufactured chiefly from Spanish *merino* wools (i.e., substituted for the finer English wools). The production statistics, however, evidently also cover a wide range of textiles, some made from Italian or other wools. From the 1550s, according to Panciera, Venice began manufacturing cloths of the 'light draperies', in imitation of the Flemish Hondschoote says, also made from a worsted warp and woollen weft, which were also exported chiefly to the Levant.<sup>100</sup>

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<sup>97</sup> Halil Inalcik, *An Economic and Social History of the Ottoman Empire*, 2 vols. (Cambridge, 1994), I: 1300-1600, pp. 327-59, noting that the first major pepper shipments from Atjeh (Aceh) had arrived in the Red Sea as early as 1530, but contending that this Muslim alliance achieved its greatest successes against the Portuguese from c.1560 to 1580. For Genoa's commercial relations with the Ottoman Empire, see Kate Fleet, *European and Islamic Trade in the Early Ottoman State: the Merchants of Genoa and Turkey*, Cambridge Studies in Islamic Civilization (Cambridge and New York: Cambridge University Press, 1999); and for the cloth trade, see pp 95-111.

<sup>98</sup> See Chorley, 'Rascie and the Florentine Cloth Industry', Table 1, p. 516: in *panni corsivi*; Chorley, 'Volume of Florentine Cloth Production', Table 1, p. 556, noting that while production had fallen to 28,492 *panni corsivi* in or by 1570, it then rose to 33,212 *panni* in 1571 (when Venetian production had slumped to just 9,492 pieces). We also know that the primary overseas market for the Medici firm's woollen cloths was the Levant. De Roover, 'Florentine Firm of Cloth Manufacturers', p. 101. See also Paolo Malanima, 'An Example of Industrial Reconversion: Tuscany in the Sixteenth and Seventeenth Centuries', in Herman Van der Wee, ed., *The Rise and Decline of Urban Industries in Italy and the Low Countries (Late Middle Ages - Early Modern Times)* (Leuven: Leuven University Press, 1988), pp. 63-74; and Van der Wee, 'Western European Woollen Industries', pp. 407-09, 425-27.

<sup>99</sup> See Table 2, and n. 87 above.

<sup>100</sup> Walter Panciera, 'Qualità e costi di produzione nei lanifici veneti (secoli XVI-XVIII)', in Giovanni Luigi Fontana and Gérard Gayot, eds., *Wool: Products and Markets (13<sup>th</sup> - 20<sup>th</sup> Century)* (Padua: Libreria Editrice Università Padova, 2004), pp. 420-22, 429-31 (Tables 1-2); Panciera, *L'Arte Matrice*, pp. 39-51.

The fact that the Italians had been so successful in marketing their own and also other European woollens in the Levant and then the broader Ottoman Empire is hardly evidence of supposed ‘dumping’, as Eliyahu Ashtor and others have frequently argued. Ashtor indeed had blamed an earlier, and purely conjectural, Mamlūk industrial decline upon such European ‘dumping.’<sup>101</sup> Textile consumption is and always has been, of course, universal, and its production virtually so, in thousands of specific varieties, ranging from the very coarsest and cheapest to the very finest and ultra-luxurious (as in woollen scarlets and silks), in a seamless continuum of values and prices.<sup>102</sup> In medieval and early modern Europe, any given country or region produced several varieties of textiles to serve its own domestic and also some foreign markets, in terms of specific types and market niches, while importing those varieties for which it had no comparative advantage in production. The specific advantages of English, Flemish, Dutch, Catalan, and Italian woollen cloth industries, in the later medieval and early modern eras, was their use of the world’s finest wools: first the English, and then, from the sixteenth century, Spanish *merino* wools, whose quality and fineness were vastly superior to those wools available in the Islamic world (which enjoyed its own comparative advantage in cotton and silk). Trade is not a Mercantilist zero-sum game, in which the victors gain by imposing their goods on the losers. Trade serves to satisfy mutual and differing wants, in order to benefit both sides, indeed in what Classical Economists called ‘the gains of trade’, from the ‘law of comparative advantage’. Ashtor’s charge of ‘dumping’ is, furthermore, absolutely absurd, because abundant evidence of cloth sales in Alexandria and Beirut indicate that the prices are equivalent (with added transport and transaction costs) to prices in the home countries of the sellers.<sup>103</sup>

### **The decline and fall of Venetian cloth production in the seventeenth century: the role of England’s**

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<sup>101</sup> See Eliyahu Ashtor, *A Social and Economic History of the Near East in the Middle Ages* (London: Collins, 1976), pp. 301-31 (esp. p. 329: ‘The slow decay of Egyptian industry and the dumping of European and Far Eastern products certainly played their part in this [Mamlūk] collapse’); Eliyahu Ashtor, ‘L’Apogée du commerce Vénitien au Levant: un nouvel essai d’explication’, in *Venezia centro di mediazione tra Oriente e Occidente (secoli XV-XVI): Aspetti e problemi*, Atti dell II Convegno Internazionale di Storia della Civiltà Veneziana, Vol. I (Florence, 1977), pp. 307-26 esp. p. 319: ‘L’importation des draps occidentaux revêtait à la fin du XIVE siècle et au début du XVe siècle le caractère d’un véritable dumping’); Eliyahu Ashtor, ‘The Economic Decline of the Middle East during the Later Middle Ages: an Outline’, *Asian and African Studies*, 15 (1981), 253-86; both reprinted, with other relevant essays in Eliyahu Ashtor, *Technology, Industry and Trade: the Levant versus Europe, 1250 - 1500*, ed. by Benjamin Z. Kedar, Variorum Collected Studies Series CS372 (Ashgate, Croft Road, Hampshire: 1992); and also Eliyahu Ashtor, *Studies on the Levantine Trade in the Middle Ages*, Variorum Collected Studies CS74 (London, 1978). See also Ashtor, ‘L’exportation de textiles occidentaux’, pp. 303-77; and Ashtor, *The Levant Trade*, pp. 433-512.

<sup>102</sup> See Munro, ‘The Medieval Scarlet’, pp. 13-70.

<sup>103</sup> See comparative values of wools and textiles, with prices for Europe, the Byzantine Empire, and the Mamlūk domains: in John Munro, ‘Wool Price Schedules and the Qualities of English Wools in the Later Middle Ages’, *Textile History*, 9 (1978), 118-69; John Munro, ‘Industrial Transformations in the North-West European Textile Trades, c. 1290 - c. 1340: Economic Progress or Economic Crisis?’ in Bruce M. S. Campbell, ed., *Before the Black Death: Studies in the ‘Crisis’ of the Early Fourteenth Century* (Manchester and New York: Manchester University Press, 1991), pp. 110 - 48; John Munro, ‘The Origins of the English ‘New Draperies’: The Resurrection of an Old Flemish Industry, 1270 - 1570’, in Negley Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10 (Oxford and New York, 1997), pp. 35-127; Munro, ‘The Medieval Scarlet’, pp. 13-70; Munro, ‘Medieval Woollens: The Western European Woollen Industries’, pp. 181-227; Munro, ‘Spanish *Merino* Wools’, pp. 431-84.

### Levant Company in textiles and Mediterranean commerce

After Venetian cloth production had peaked in 1602, at 28,728 pieces, it then followed a steep downward curve, with some oscillations: to 23,000 pieces in 1620, to 13,275 pieces in 1630, to 10,082 pieces in 1650, to just 5,226 pieces in 1670, to 2,033 pieces in 1700, and then to 1,689 pieces, when the series ends in 1723.<sup>104</sup> That sudden and indeed brutal seventeenth-century slump and then virtual collapse of the Venetian cloth industry (and of other Italian woollen industries) has traditionally been attributed essentially to internal factors. The most important, according to a litany of faults set forth by Sella himself, Carlo Cipolla, Brian Pullan, Fernand Braudel, was this industry's 'failure both to lower prices and to innovate'. That in turn supposedly reflects the roles of rigid guild restrictions, strictly enforced by the city government, excessive taxation, and, of course, the payment of 'high wages', an inevitable *deus ex machina* argument for industrial decline.<sup>105</sup> Because the Venetians lost much of their Ottoman markets to the English cloth trade, during the seventeenth century, the 'faults' of the Venetian industry are then contrasted with the supposedly lower-cost virtues of the English woollen cloth industry. We have no way of comparing labour costs in the two industries; but most economists take a dim view of the all-too-common 'high wage' argument. If high living costs and high taxes may be factors in explaining high wages (as, for example, in the eighteenth-century Dutch Republic), nevertheless 'high wages' can be justified and maintained only if and when they equal the marginal revenue product of labour: i.e., the market value of the last unit of the commodity produced by the last worker hired. The supposed advantages, in the form of lower wages, that the largely rural or small-town woollen cloth industry enjoyed in early-modern England are really explained by a productivity, set of skills, and education that were substantially inferior to those found in early-modern towns, which generally also enjoyed lower transaction costs in organising labour.

Nor can it be proved that guild regulations, especially when chiefly designed to ensure quality controls in manufacturing industries subject to 'price-making' monopolistic-competition structures, are

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<sup>104</sup> See Table 2 and n. 87 for the statistics on Venetian cloth production.

<sup>105</sup> Sella, 'Rise and Fall of the Venetian Cloth Industry', pp. 106-26 (quotations on pp. 120-21); Domenico Sella, 'Crisis and Transformation in Venetian Trade', in Brian Pullan, ed., *Crisis and Change in the Venetian Economy in the Sixteenth and Seventeenth Centuries* (London, 1968), pp. 88-105; translated by the author, also in a revised and expanded form, from 'Il declino dell'emporio realtino', in *La civiltà veneziana nell'età barocca* (Venice, 1959); Domencio Sella, *Commerci e industrie a Venezia nel secolo XVII* (Venice-Rome, 1961); Carlo M. Cipolla, 'The Economic Decline of Italy', also in Pullan, *Crisis and Change in the Venetian Economy*, pp. 127 - 45 [Translated by Janet Pullan from 'Il declino economico dell'Italia', in *Storia dell'economica italiana* (Turin: Boringhieri, 1959), which in turn was a revised and expanded version of 'The Decline of Italy: the Case of a Fully Matured Economy', *Economic History Review*, 2nd ser., 5 (1952)]; Brian Pullan, 'Wage Earners and the Venetian Economy, 1550-1630', *Economic History Review*, 2nd ser., 16 (1964), 407-25, republished in Pullan, *Crisis and Change*, pp. 146-74; Fernand Braudel, P. Jeannin, J. Meuvret, R. Romano, 'Le déclin de Venise au XVII siècle', in *Aspetti e cause della decadenza veneziana nel secolo XVII: Atti del convegno 27 giugno-2 luglio 1957, Venezia* (Venice-Rome, 1961), pp. 22-85; Richard T. Rapp, 'The Unmaking of the Mediterranean Trade Hegemony: International Trade Rivalry and the Commercial Revolution', *Journal of Economic History* 35 (1975), 499-525; Richard Rapp, *Industry and Economic Decline in Seventeenth-Century Venice* (Cambridge, 1976); Ralph Davis, 'England and the Mediterranean, 1570-1670', in F.J. Fisher, ed., *Essays in the Economic and Social History of Tudor and Stuart England* (London, 1961), pp. 117-37. For a good and fair survey, see Salvatore Ciriaco, 'Mass Consumption Goods and Luxury Goods: the De-Industrialization of the Republic of Venice from the Sixteenth to the Eighteenth Century', in Van der Wee, ed., *Rise and Decline of Urban Industries*, pp. 41-61. He notes the importance of plague in the 1630s, for industrial decline.

necessarily injurious to an industry's fortunes. After all, such guild regulations did not prevent the rise and expansion of the Flemish, Florentine, and indeed the Venetian cloth industries.<sup>106</sup> Furthermore, the extent to which the English woollen cloth industry had, by the mid-sixteenth century, become subject to Parliamentary legislation and regulation is often overlooked.<sup>107</sup>

Did the English, however, still enjoy a significant advantage in their wool supplies, as they had in the fifteenth century: a vital consideration when wools were so very important as the prime component of pre-finishing manufacturing costs and as the prime determinant of textile quality?<sup>108</sup> The answer this time, for the seventeenth century, is decisively no: in terms of the higher-valued heavy-weight woollens. For England's primacy in fine quality-wool production had now been decisively lost to Spanish *merino* wools: so much so that England was now importing substantial quantities of Spanish wools in order to produce, as a mixture with some of the best and few remaining high quality March wools, what were known as 'Spanish medleys', or 'superfine' broadcloths. Since the Venetian industry was also using Spanish *merino* wools, and since the transportation and merchandising costs in acquiring these Spanish wools were presumably lower than those incurred by the far distant English industry, the Venetians should have enjoyed that cost advantage. Whether or not the English enjoyed any advantage in using some of their own finer wool in the Spanish medleys and other 'superfines' cannot be properly ascertained: for, if those wools were now somewhat cheaper than the finer Spanish *merino* wools, they were also somewhat inferior.<sup>109</sup> In any event, no conceivable set of changes affecting Venetian productivity can possibly explain an industrial decline that was so sudden, so precipitous, and so very steep.

The true advantage that the English did enjoy, dating from the later sixteenth century, was – as the Venetian advantage had once been – was far more commercial than purely industrial. That commercial advantage had two primary components: institutional- diplomatic, in the form of the new Levant Company, and a superior naval technology. The explanation of the first requires a brief history of the most important event in Ottoman-European relations in the later sixteenth century. In 1570-71, the Ottoman Sultan succeeded in seizing Cyprus, and thus control of the Aegean Sea, from Venice, with a resulting massacre that horrified Christian Europe. The Papacy then organized an alliance, effectively under Venetian control, which inflicted a truly decisive defeat on the Turkish armada in the Gulf of Corinth, known as the Battle of Lepanto, in October 1571, a victory that was essentially due to European superiority in naval artillery, and a victory that vanquished forever any notions of 'the invincibility of the Turks'. Indeed Ottoman naval power soon 'declined rapidly'. The Ottomans, now concerned about the potential dangers to their power in the

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<sup>106</sup> See in particular the arguments in Munro, 'Urban Regulation and Monopolistic Competition', pp. 41 - 52; and Munro, 'The Symbiosis of Towns and Textiles', 1-74. For Venice itself, and the same role of guilds in the silk industry, see Luca Molà, *The Silk Industry of Renaissance Venice* (Baltimore and London: The Johns Hopkins University Press), pp. 55-160.

<sup>107</sup> See Great Britain, Record Commission (T.E. Tomlins, J. Raithby, et. al, eds.), *Statutes of the Realm*, 6 vols. (London, 1810-22), Vol. IV:i, 136-7 (5-6 Edward VI, cap. 6, pt. 1); George D. Ramsay, *The Wiltshire Woollen Industry in the Sixteenth and Seventeenth Centuries* (London, 1943; 2nd ed., 1965).

<sup>108</sup> See above, pp. and n. . For relative wool costs, as a share of total production costs, in the Florentine cloth industry, see Goldthwaite, 'Florentine Wool Industry', Tables 2-3, p. 537; De Roover, 'A Florentine Firm', Appendix IV, p. 118.

<sup>109</sup> See Munro, 'Spanish *Merino* Wools', pp. 470-71; Carter, *His Majesty's Spanish Flock*, pp. 9, 11, 412, 420-22; Julia de Lacy Mann, *The Cloth Industry in the West of England from 1640 to 1880* (Oxford, 1971), pp. 257-59.

Mediterranean basin, sought a new European alliance, one more reliable than the French had been, particularly as a counterweight to Venetian power.<sup>110</sup>

The English quickly responded, for the Turks now offered them their very first and most welcome opportunity to enter into and expand their Mediterranean trade.<sup>111</sup> Ten years later, in 1581, the English crown authorized the creation of a new overseas joint-stock trading company, by far the most successful one formed in the sixteenth century: the Turkey Company, reorganized, in 1591, as the Levant Company. What the Turks wanted in material terms, apart from diplomatic support, were arms and munitions, which the Levant Company exported to their domains in considerable numbers. What the English wanted was a new and most promising outlet for their textiles, and access to both raw silk and spices. Initially, the woollen textiles that the Levant Company sold in Ottoman markets were coarse, relatively cheap, if heavy-weight kerseys. From the 1590s, however, Levant Company merchants began selling larger and larger quantities of the far finer Suffolk broadcloths, and then above all the Spanish medley ‘superfines’, which soon superseded the kerseys and then rapidly displaced not only the Venetian but also other Italian and Dutch woollens from Mediterranean markets. Thus, from 1598 to 1634, the Company’s sales of broadcloths rose from just 750 to about 17,000 pieces, while those of kerseys fell from 18,031 to 2,300 pieces. According to Pagano di Divitiis, in 1634, English woollens were accounting for 40 percent of sales in the Levantine markets, while the Venetian and French shares had been reduced to 26 percent each, and the Dutch to just 8 percent.<sup>112</sup> She also contends that the Levant Company’s chief return cargo in return for these woollens was Asian silk, far and away the single most imported raw material into seventeenth-century England, accounting for 29.5 percent of all such imports, by value, in 1622, 28.4 percent in 1640, 20.9 percent in 1669, and 23.4 percent in 1701.<sup>113</sup>

One may wonder, however, why the Ottoman Empire served as such an important market for heavy-weight fine quality woollen cloths, such as those produced by both Venice and England, a commodity that was seemingly more suited (so to speak) for northern climates. Yet, by 1640, the Mediterranean basin was accounting for 45.5 percent of the sales of English woollens, while northern Europe accounted for 46.9 percent, and the Americas for the remaining 7.6 percent; in the 1660s, the Mediterranean basin was now accounting for over half, 56.5 percent of the market for these woollens, while northern Europe accounted

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<sup>110</sup> Grant, *History of Europe*, pp. 207-25; Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, translated by Sian Reynolds, 2 vols. (London and New York, 1972-73), vol. I, pp. 615-29.

<sup>111</sup> Technically the first successful English maritime venture was the arrival of the *Swallow* in the harbour of Livorno (Leghorn) on 23 June 1573; and Livorno would continue to be very important for English trade in the Mediterranean. See Gigliola Pagano de Divitiis, *Mercanti inglesi nell’Italia del Seicento: Navi, traffici, egemonie* (Venice: Marsilio Editore), 1990; republished as *English Merchants in Seventeenth-Century Italy*, trans. by Stephen Parkin, Cambridge Studies in Italian History and Culture (Cambridge: University Press, 1997), p. 5. On the Levant Company, see also pp. 1-35.

<sup>112</sup> Pagano de Divitiis, *English Merchants in Seventeenth-Century Italy*, p. 32. She also contends that the English ‘counterfeited the Venetian woollens stamped with the lion of St. Mark, although they were of inferior quality and cost less’; but proof is not supplied. See also Rapp, ‘The Unmaking of the Mediterranean Trade Hegemony’, pp. 499-525.

<sup>113</sup> Pagano de Divitiis, *English Merchants*, Table I.1, p. 33.

for only 37.6 percent.<sup>114</sup>

The explanation for the economic importance of the Ottoman Empire itself is a combination of population size and densities, topography, and especially climatic zones. In the later sixteenth century, the European and Asian portions contained at least sixteen million (Braudel), with another six million in Africa; and some estimates of the aggregate Ottoman population run to thirty-five million (Barkan), almost half of Europe's total population in 1600, estimated at 77.9 million.<sup>115</sup> Equally important is the fact that much of this Empire then consisted of high-plateaux lands – in the European (Ottoman) Balkans, in Asia Minor itself, and in neighbouring Safavid Persia – which became very cold at night even in the summer months, and certainly very cold throughout the winter (in Egypt, as well). As Ralph Davis has so eloquently commented, ‘when the cold gales of autumn blew from the uplands of Asia Minor and the Balkans, the prosperous Turk or Persian counted himself lucky to be wrapped in the thickest and heaviest of English woollens’.<sup>116</sup>

### **Braude's ‘dumping thesis’ to explain the Levant Company's success in marketing English woollens**

Benjamin Braude has offered, however, an alternative hypothesis for the Levant Company's success in marketing English woollen textiles in the Ottoman Empire: namely, that it engaged in ‘dumping’. In other words, merchants of the Levant Company were selling such woollens there for a price below that charged to domestic customers of English woollen cloths.<sup>117</sup> His thesis is that its merchants did so in order to gain

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<sup>114</sup> Pagano de Divitiis, *English Merchants*, Table I.1, p. 34; based on C. G. A. Clay, *Economic Expansion and Social Change: England, 1500-1700*, Vol. II: *Industry, Trade, and Government* (Cambridge and New York, 1984), Table XI, p. 142.

<sup>115</sup> See Earle, ‘Commercial Development of Ancona’, pp. 40-41; Braudel, *The Mediterranean*, Vol. I, 395-98; Ömer Lûfti Barkan, ‘La “Méditerranée” de Fernand Braudel vue d’Istanbul’, *Annales: Économies, sociétés, civilisations*, 9 (Jan.-March 1954), 191-93; İnalçik, *Economic and Social History of the Ottoman Empire*, I, 25-43: he states (p. 29) that ‘Barkan's figures must be exaggerated’; but he does not provide an alternative estimate. See also Jan de Vries, ‘Population’, in Thomas A. Brady, Heiko Oberman, and James D. Tracy, eds., *Handbook of European History, 1400-1600: Late Middle Ages, Renaissance and Reformation*, 2 vols. (Leiden-New York: E.J. Brill, 1994), vol. I: *Structures and Assertions*, Table 1, p. 13.

<sup>116</sup> Davis, ‘England and the Mediterranean, 1570-1670’, pp. 117-26 (quotation on pp. 122-23), contending (p. 125) that the Levant Company's early 17<sup>th</sup>-century trade was largely ‘the exchange of broadcloth for raw silk’. See also Van der Wee, ‘Western European Woollen Industries’, pp. 456-61.

<sup>117</sup> Benjamin Braude, ‘International Competition and Domestic Cloth in the Ottoman Empire, 1500-1650: A Study in Undevelopment’, *Review (Fernand Braudel Center)*, 2:3 (Winter 1979), 437-51. His contentions are repeated, but with no new evidence, in Benjamin Braude, ‘The Rise and Fall of Salonica Woollens, 1500-1650: Technology Transfer and Western Competition’, *Mediterranean Historical Review*, 6 (1991), 216-236; reprinted in Alisa Meyuhis Ginio, ed., *Jews, Christians and Muslims in the Mediterranean World after 1492* (London: Frank Cass, 1992), pp. 216-236, esp. pp. 228-36. In both publications, he also incorrectly contends that the English cloth industry had an advantage over Ottoman producers in its wool inputs, in that English wool prices remained stable for much of the 17<sup>th</sup> century, while Turkish wool prices rose strongly. But he has confused changes in nominal prices with real prices, in not taking account of the drastically inflationary debasements of the Ottoman coinage in the 17<sup>th</sup> century, when England, enjoying a perfectly stable coinage, was experiencing deflation, from the 1640s. See Pamuk, *Monetary History of the Ottoman Empire*, pp. 131-48; Appendix II, pp. 235-40, especially Graph A-1, p. 236. For English prices, see Phelps Brown and Hopkins, ‘Seven Centuries of the Prices of Consumables’, pp. 296-314.

access to an Ottoman commerce that would allow them to buy and import Levantine and Persian silk, which, as just noted from Pagano di Divitis' research, was indeed far and away the Company's most lucrative import into England. As Braude rightly notes, the Levant Company had a monopoly on this silk-import trade from the Levant, one that undoubtedly provided very high profits. But both Braude's evidence and his logic for such 'dumping' are quite unconvincing. He compares the prices for English 'cloth' sold in both 'London' and Istanbul in the 1620s, using exchange rates (converting Turkish aspers into English sterling shillings) from the Levant Company Ledger Books.<sup>118</sup> Even if the exchange rates are accurate, these 'prices' still remain meaningless, unless they can be applied to specific types of cloths. England, as already noted, produced a very wide range of cloths, from very cheap to ultra-expensive, as did most of its international competitors. Indeed, as also noted earlier, the organisation of cloth production and textile markets for higher priced fabrics, in later medieval and early modern Europe, was one of monopolistic competition, by which producers and merchants sought to convince consumers that there were no suitable substitutes, in terms of quality and price, for the specific, highly individual textile product being marketed.

Thus we need to know what types of cloths are represented in Braude's price lists: are they Winchcombe kerseys, Devonshire dozens, West Country broadcloths, *panni di Londra*, or Sussex 'superfine Spanish medleys'?<sup>119</sup> We are given no such information, which is also lacking in his one single source, the well known Beveridge collection on English prices. The one series that Braude cites is for 'mixed coloured' broadcloths that Westminster Abbey purchased each year for its servants: generally at 13s 4d per yard, from 1613 to 1641; and they do not appear to be actual market prices.<sup>120</sup> At these prices, these woollens were certainly in the luxury category. Their purchase, in the 1620s, would have cost a master mason (Oxford-Cambridge) more than two weeks' wages per yard; and for a complete broadcloth of 24 yards, that mason would have had to spend 320 days' wages, well more than a year's annual wage income (at 210 days' employment).<sup>121</sup> Braude does not, however, cite another of Beveridge's cloth price series: for broadcloths purchased for Westminster scholars.<sup>122</sup> They were far cheaper, averaging only 7s 4d per yard (only 55 percent as much) during these same years. From Beveridge's raw data and other sources, Phelps Brown and Hopkins have presented prices for other woollens, purchased for servants and scholars at Winchester and Eton Colleges, which, for the period 1615-40, averaged just 5s 0d and 6s 6d per yard, respectively.<sup>123</sup> Thus Braude's citation of one single price series for unusually expensive woollens (at Westminster) cannot possibly justify his charge that the Levant Company was 'dumping' woollens in Ottoman markets; nor is there any other evidence to make that case, which, to repeat, would require a comparison of English and Turkish prices for very similar if not identical fabrics, in the same years.

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<sup>118</sup> Braude, 'International Competition', Tables I and II, p. 441; Tables III and IV, pp. 444-45.

<sup>119</sup> See, for example, the text in n. 83, above.

<sup>120</sup> Lord William Beveridge, *Prices and Wages in England from the Twelfth to the Nineteenth Century*, Vol. I: *Price Tables: Mercantile Era* (London: Longman Green, 1939; reissued London: Frank Cass and Co, Ltd., 1965), 183.

<sup>121</sup> The daily wage for master masons in Oxford and Cambridge was then 12d sterling (1s). E. H. Phelps Brown and Sheila V. Hopkins, 'Seven Centuries of Building Wages,' *Economica*, 22:87 (August 1955), 195-206; reprinted in E.H. Phelps Brown and Sheila V. Hopkins, *A Perspective of Wages and Prices* (London, 1981), pp. 1-12.

<sup>122</sup> Beveridge, *Prices and Wages*, p. 193.

<sup>123</sup> Archives of the British Library of Economic and Political Science: Phelps Brown Papers.



In any event, why, from the forgoing analysis, would the Levant Company have needed or wanted to engage in ‘dumping’, i.e., in presumably selling such cloths at a loss? For there is no evidence that that mutually harmful technique was in any way necessary to gain access to Ottoman trade. Furthermore, any such ‘dumping’ would have reduced the sales revenues and net incomes necessary to purchase the silks and spices – even if unquestionably that import trade was more profitable than the export trade to the Ottoman Empire. In other words, why would the Levant Company have adopted a strategy that required the export of even more specie, especially when such exports (without a costly licence) was still illegal.<sup>124</sup>

### **The English Levant Company’s Mediterranean Trade in Products of the New Draperies**

At the same time that the Levant Company was enjoying such success in marketing heavy-weight woollens in the European, Turkish, and the Levant regions of the Ottoman Empire, it was also selling even larger quantities of the semi-worsted or serge-type cloths, far lighter weight and much cheaper fabrics, in many warmer parts of Mediterranean lands, especially in the western basin. These fabrics were the products of the aforementioned, so-called New Draperies.<sup>125</sup> As noted earlier, they had been transplanted from Flanders into East Anglia (Norfolk and Suffolk), after the outbreak of the Revolt of the Netherlands against Spanish rule (1568-1609). Structural changes in international markets, those discussed earlier, in favouring the commerce in cheaper textiles, and changes in demand, especially textile fashions, may have been the most important factors in explaining why and how they finally became the predominant form of textile manufacturing in seventeenth-century England.<sup>126</sup>

Yet, a comparative advantage in English wool supplies, a very different form of wool, now also came to play an important role in the rise of these New Draperies. For the concurrent Tudor-Stuart Enclosure movements, over several decades, resulted in a proportional and very major increase in the production of longer-stapled, coarser wools that were much more suitable for worsted than for the finer woollen yarns, whose supply thus diminished significantly. That quite radical change in the character and supply of English wools came from a combination of richer pastures and increased supplies of fodder crops throughout the year, and, even more important, from a selective breeding of sheep (virtually impossible with intermingled peasant flocks in Common Field agriculture), designed to produce larger animals for the urban meat markets.<sup>127</sup>

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<sup>124</sup> From January 1364, Statute 36 Edwardi III, stat. 1, c. 2 had forbidden the export of any English coin (without a royal licence) as well as all forms of bullion.. *Statutes of the Realm*, vol. I, 383. In May 1663, Parliament repealed its provisions concerning bullion exports: in Statute 15 Carolus II. c. 7, in *Statutes of the Realm*, vol. V, p. 451, sec. 9. That legislation was influenced by argument set forth by the East India Company: in Thomas Mun, *England's Treasure by Forraign Trade* [1664] (reissued Oxford, 1937). See n. 112 below.

<sup>125</sup> See above, pp.

<sup>126</sup> See above, pp. ; and B.A. Holderness, ‘The Reception and Distribution of the New Draperies in England’, and Luc Martin, ‘The Rise of the New Draperies in Norwich’, all in Negley Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10 (Oxford and New York, 1997), pp. 217-44, 245-74; Williams, ‘New Draperies’, pp. 353-58.

<sup>127</sup> The staple length and quality of wools are functions of the size of the sheep: from both breeding and sheep management. Peter Bowden, ‘The Wool Supply and the Woollen Industry,’ *Economic History Review*, 2nd ser. 9 (1956-57), 44-58; Peter Bowden, *The Wool Trade in Tudor and Stuart England* (London, 1962), pp. 1-76; Van der Wee, ‘The Western European Woollen Industries’, pp. 423-25, 452-61.

By the mid-seventeenth century, the results of these agrarian, industrial and commercial changes had become readily evident in the statistical data on English textile exports. In 1640, when textiles still for almost all of English exports, 92.3 percent by value, the woollens of the Old Draperies still exceeded the value of the products of the New Draperies (bays, says, serges, perpetuanas, etc.), but not by much: 48.9 percent for the former vs. 43.3 percent, for the latter.<sup>128</sup> In the 1660s, 24.23 percent of textiles from the New Draperies sold in the Mediterranean went to Italy, 10.1 per cent to Portugal, and the largest share, 65.71 percent to Spain (and the Spanish Americas).<sup>129</sup> By 1700, English exports of cloth from the New Draperies had now increased, in absolute and relative terms, to account for 58.8 percent of the total textile exports by value (£2.82 million); high-quality broadcloths, accounted for 25.4 percent; and the cheaper, coarser kerseys, dozens, and other ‘narrow’ woollens, for the remaining 15.8 percent.<sup>130</sup>

### **English naval power and Mediterranean commerce in the seventeenth century**

The other very real and very important advantage that allowed the English to gain commercial supremacy in Ottoman and other Mediterranean markets by the later seventeenth and eighteenth centuries was a decisively superior and also lower cost naval technology. As Ralph Davis has demonstrated, the English were now building and operating far larger, far stronger oak-based carracks, which were also more heavily gunned (with ranks of up to 60 powerful cannons) than were those of any of their rivals. Both pirates and Muslim corsairs – which had so menaced the Mediterranean shipping lanes – learned at their very painful cost to stay away from the English galleons. To be sure, the operating costs were considerably higher than those for rival ships (about ten percent), but the insurance rates were correspondingly much lower. The greater certainty that cargoes would safely and speedily reach their destinations was certainly also a very powerful advantage. All such factors help explain why the English gained, as well, such a large share of the Mediterranean ‘carrying’ trades.<sup>131</sup> It is indeed significant to note that the total tonnage of the English merchant fleet rose from just 50,000 tons in 1572 to 340,00 tons in 1686.<sup>132</sup>

At the same time, as several historians have argued, most recently and most eloquently by Pagano di Divitiis, the Venetian and other Italian (and also Spanish) ship-building industries were experiencing a veritable ‘crisis’ from the 1570s, especially in constructing larger vessels, from soaring costs that primarily

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<sup>128</sup> Clay, *Economic Expansion and Social Change*, Table XIII, p. 144.

<sup>129</sup> Pagano di Divitiis, *English Merchants*, Table 5.6, p. 170.

<sup>130</sup> Julia de Lacy Mann, *The Cloth Industry in the West of England from 1640 to 1880* (Oxford, 1971), Appendix I: Table B, p. 309 (total value of £2,818,871, excluding hosiery); Van der Wee, ‘Western European Woollen Industries’, Table 8.6, p. 457; Clay, *Economic Expansion*, Table XV, p. 146, with slightly different figures, total textile exports worth £3,045,196, as the average of exports in 1699-1701: 41.15% in products of the Old Draperies; 51.96 % in products of the New Draperies, and 5.89% Miscellaneous (stockings, hats, others).

<sup>131</sup> Davis, ‘England the Mediterranean’, pp. 126-37. See also Ralph Davis, *English Overseas Trade, 1500 - 1700* (London, 1973), pp. 20-31; Ralph Davis, *The Rise of the English Shipping Industry in the Seventeenth and Eighteenth Centuries* (London, 1962), pp. 1-57, 228-56; Pagano di Divitiis, *English Merchants*, pp. 41-55; see in particular, p. 43: ‘While Holland was pre-eminent in the development of merchant shipping, England outdid all other countries in the design of warships’.

<sup>132</sup> Pagano di Divitiis, *English Merchants*, Table 2.1, p. 43; Davis, *English Shipping Industry*, pp. 7, 10, 15.

reflected a scarcity of suitable ship timbers in the Mediterranean zone, compared to the very abundant and low cost supply available in the Baltic zone, but even within England itself. For the Italians to import northern timber or to buy northern-built ships, though an obvious and increasingly used alternative, was still relatively costly in terms of transport and transaction costs.<sup>133</sup>

### **The East India Companies, the spice trade, and the decline of Venice in the seventeenth century**

Finally, the rapid seventeenth-century decline of the Venetian cloth industry may also be related to adverse developments in the spice trade, which certainly had a very major impact on the overall decline of Venetian commerce in the seventeenth century. The Levant Company, in trading with the Ottoman Levant, was also anxious to secure some access (via Aleppo) to that spice trade; and some its key merchants and investors were responsible for the establishment of by far the most powerful of the new overseas joint-stock trading companies: the East India Company, chartered in 1600, with a monopoly on English trade with the Indian Ocean basin. At almost the same time, the Dutch formed the Vereenigde Oost-Indisch Compagnie (VOC: the United East India Co), for the same purpose. Taking advantage of disruptions in the European spice trade in the 1590s, this time involving both the Portuguese and the Venetians, the Dutch and English rivals engaged in a race to establish a direct sea route to the Indies (and to India itself). These two companies, but most especially the Dutch, not only destroyed much (if not all) of the remaining Portuguese commercial power in the Indies, but succeeded where the Portuguese had failed: in securing an almost complete monopsony over the East Indies spice trade. Though the Dutch, in the 1622 ‘Massacre of Amboyna’, evicted the English from the East Indies, the latter came to benefit more by concentrating their energies on securing control over the commerce of India itself. Certainly Venetian commercial power in the spice trade rapidly dwindled. The loss of that power, in buying spices via Ottoman ports, may have also contributed to the decline in their woollen sales in the Ottoman Empire – though the other factors just cited may have been more important.

### **The Decline and Fall of the Florentine Cloth Industry, c. 1570 - c. 1670**

Finally, the Florentine cloth industry, after enjoying a marked revival and new prosperity, especially with its production and sales of the new *rascie* serges, also came to suffer an irredeemable decline, as serious as the Venetian. Its aggregate cloth output, having risen from about 14,700 notional *panni corsivi* (as valued at 30 florins) in 1553 to a peak of 33,212 *panni* in 1571, then fell to 15,723 *panni* in 1586, a decline that continued to an annual mean of 12,863 *panni* in 1602-09, and to an annual mean of 6,428 *panni* in the decade 1630-39, and then to about 3,400 *panni* per year in the 1660s.<sup>134</sup> Since the Antwerp market had been so important for these Florentine *rascie* and since the 1570s proved to be such a crucial turning point, perhaps we should consider the importance of The Revolt of the Netherlands (1568-1609): with the consequent ‘Spanish Fury’ that devastated Antwerp in 1576, and then the ‘Sack of Antwerp’ by the Duke of Anjou in 1583, which then led to its rapid decline and shift of commerce to secure and well protected Amsterdam, a very major factor in the continuing ascent of Dutch commerce.

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<sup>133</sup> Pagano di Divitiis, *English Merchants*, pp. 36-46, and the many secondary sources cited here.

<sup>134</sup> Chorley, ‘Rascie and the Florentine Cloth Industry’, Tables 1 and 2, pp. 516-18; Berti, *Lana, panni e strumenti contabili*, p. 46. See also Malanima, ‘Industrial Reconversion’, pp. 67-68. He dates the decisive turning point into irredeemable decline as ca. 1575. He estimates that output had fallen to about 13,000 pieces in the late 1590s, with a brief recovery to 17,000 cloths in 1601-02; but after a new crisis in 1616, output fell to 8,000 pieces in the 1620s, to 6,000 by the 1630s and 1640s; and to only 1,500-2,000 pieces ca. 1720.

If these events very likely proved harmful for the trade in these Florentine textiles, undoubtedly even more harmful was the Levant Company's invasion of the Mediterranean, with its large and growing sales of rival, competitive, and much cheaper, lighter serge products from the English New Draperies. At the same time, the Dutch New Draperies, and some other continental competitors, also posed a threat to the Florentine industry.<sup>135</sup> One ominous portent on the Antwerp market in the 1560s was the appearance of many rival and far cheaper 'ras', which 'rashes' also came to be manufactured in significant numbers in Leiden from the 1620s (though it, too, finally also succumbed to English competition).<sup>136</sup>

By the later seventeenth century, according to Paolo Malanima, the Florentine cloth industry, having lost the Spanish, French, southern Italian, and Levantine markets, 'one by one', was now restricted to producing cloths for its own domestic markets, woven chiefly from southern Italian wools.<sup>137</sup> The once glorious days of the Italian woollen cloth industry, or of the once so preeminent Florentine and then Venetian woollen industries, had come to a final end – if not, of course, for all Italian textiles.

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<sup>135</sup> Chorley, 'Rascie and the Florentine Cloth Industry', pp. 504-14, and Goldthwaite, 'Florentine Woollen Industry', pp. 548-50, also cite other important factors involved in the decline of the 'Florentine commercial and financial houses... a splendid subject that has not yet found its historian', and to rising, new competition from cheaper, rival products, from Italy as well as from England.

<sup>136</sup> Thijs, 'Les textiles au marché anversois', p. 84; Van der Wee, 'Western European Woollen Industries', Table 8.4, p. 448, in the *nieuw draperie* that had rapidly developed in Leiden after the 1568 Revolt. See n. 79 above. Ultimately, the English New Draperies would reign supreme in the markets for lighter, cheaper textiles, forcing the Leiden industry to obey the Law of Comparative Advantage, by reverting back to the production of heavy-weight woollens (made from Spanish *merino* wools) of the *oude draperie*. On this phenomenon, see Charles Wilson, 'Cloth Production and International Competition in the Seventeenth Century', *Economic History Review*, 2nd ser., 13:2 (1960), 209-21; reprinted in Charles Wilson, *Economic History and the Historian: Collected Essays* (London, 1969), pp. 94-113.

<sup>137</sup> Malanima, 'Industrial Reconversion', pp. 67-68.

**Table 1 English Wool Exports in Sacks, 1280 - 1540**

in decennial means

Decade	Denizen Exports	% of Total	Alien Exports	% of Total	Total Sacks	Equivalent Broadcloths
1281-90	n.a.		n.a.		26,469.00	114,698.91
1291-1300	n.a.		n.a.		25,480.20	110,414.12
1301-10	20,417.22	57.22%	15,262.88	42.78%	35,680.10	154,613.65
1311-20	n.a.		n.a.		n.a.	
1321-30	15,981.58	63.53%	9,175.23	36.47%	25,156.50	109,011.42
1331-40	18,906.50	69.80%	8,178.70	30.20%	27,085.20	117,369.11
1341-50	13,145.04	58.09%	9,484.31	41.91%	22,629.35	98,060.44
1351-60	n.a.		n.a.		31,708.40	137,402.96
1361-70	18,622.77	65.83%	9,667.73	34.17%	28,290.50	122,592.07
1371-80	16,805.01	72.53%	6,363.99	27.47%	23,169.00	100,398.92
1381-90	14,730.50	79.99%	3,684.20	20.01%	18,414.70	79,796.97
1391-1400	14,054.50	79.40%	3,647.20	20.60%	17,701.70	76,707.31
1401-10	12,598.10	90.40%	1,338.10	9.60%	13,936.20	60,390.15
1411-20	12,994.30	92.96%	984.80	7.04%	13,979.10	60,576.05
1421-30	12,896.30	93.44%	905.60	6.56%	13,801.90	59,808.19
1431-40	6,438.60	87.22%	943.10	12.78%	7,381.70	31,987.34
1441-50	7,839.50	88.11%	1,057.80	11.89%	8,897.30	38,554.94
1451-60	6,450.70	85.01%	1,137.90	14.99%	7,588.60	32,883.91
1461-70	7,205.60	91.91%	634.20	8.09%	7,839.80	33,972.44
1471-80	7,602.00	88.45%	992.70	11.55%	8,594.70	37,243.67
1481-90	7,796.60	89.76%	889.60	10.24%	8,686.20	37,640.17
1491-1500	7,279.00	92.77%	567.20	7.23%	7,846.20	34,000.17
1501-10	6,482.80	85.68%	1,083.70	14.32%	7,566.50	32,788.14
1511-20	7,140.20	93.45%	500.60	6.55%	7,640.80	33,110.11
1521-30	4,544.80	91.20%	438.40	8.80%	4,983.20	21,593.85
1531-40	3,025.40	86.98%	452.90	13.02%	3,478.30	15,072.62

1 sack = 364 lb. = 165.198 kg. From one woolsack 4.333 broadcloths could be manufactured (24.0 yd by 1.75 yds = 21.946 metres by 1.600 metres)

**Source:** Eleanora Carus-Wilson, and Olive Coleman, *England's Export Trade, 1275-1547* (Oxford, 1963).

**Table 2. Venetian Woollen Cloth Production, 1516 - 1723, in quinquennial means**

<b>Years</b>	<b>Cloth Outputs</b>	<b>Years</b>	<b>Cloth Outputs</b>
<b>1516-20</b>	2,416.60	<b>1621-25</b>	15,659.40
<b>1521-25</b>	3,647.80	<b>1626-30</b>	16,818.40
<b>1526-30</b>	4,593.80	<b>1631-35</b>	12,340.20
<b>1531-35</b>	5,492.20	<b>1636-40</b>	12,393.40
<b>1536-40</b>	5,078.40	<b>1641-45</b>	12,780.40
<b>1541-45</b>	7,891.40	<b>1646-50</b>	9,810.00
<b>1546-50</b>	10,151.60	<b>1651-55</b>	10,696.00
<b>1551-55</b>	11,547.80	<b>1656-60</b>	8,567.20
<b>1556-60</b>	16,131.60	<b>1661-65</b>	7,966.40
<b>1561-65</b>	16,075.80	<b>1666-70</b>	6,464.00
<b>1566-70</b>	18,513.20	<b>1671-75</b>	6,493.20
<b>1571-75</b>	17,512.20	<b>1676-80</b>	4,069.40
<b>1576-80</b>	17,986.00	<b>1681-85</b>	3,673.80
<b>1581-85</b>	19,709.40	<b>1686-90</b>	2,058.20
<b>1586-90</b>	19,093.20	<b>1691-95</b>	2,863.00
<b>1591-95</b>	23,393.00	<b>1696-00</b>	2,426.40
<b>1596-00</b>	21,567.20	<b>1701-05</b>	2,453.80
<b>1601-05</b>	23,572.80	<b>1706-10</b>	2,132.20
<b>1606-10</b>	18,535.40	<b>1711-15</b>	2,019.00
<b>1611-15</b>	17,917.40	<b>1716-20</b>	2,141.00
<b>1616-20</b>	19,682.80	<b>1721-23</b>	1822.33

**Sources:**

Walter Panciera, *L'Arte matrice: I lanifici della Repubblica di Venezia nei secoli XVII e XVIII*, Studi veneti, no. 5 (Treviso: Fondazione Benetton Studi Ricerche and Canova Editrice, 1996), Table 2, pp. 42-43, which also extends the series from 1713 to 1723. I wish to offer my sincere thanks to Professor Panciera, who sent me a photo-copy of the document from the Venetian archives (ASCW, *Cinque savi* b. 476) containing the original data. His table corrects many errors that had been reproduced in the much better known series of statistics on Venetian woollen cloth production, in Domenico Sella, 'Rise and Fall of the Venetian Woollen Industry', in Brian Pullan, ed., *Crisis and Change in the Venetian Economy in the Sixteenth and Seventeenth Centuries* (London, 1968), pp. 106-26; translated by the author, in a revised and expanded form, from 'Les mouvements longs de l'industrie lainière à Venise', *Annales: Économies, sociétés, civilisations*, 12 (1957), 29 - 45. Unfortunately, I found it necessary to correct his statistics, from the original archival document, for the following four years: 1521, 1618, 1639, 1662.

**Table 3.**  
**Venetian Cloth Production, 1516 - 1723,**  
**in decennial means**

<b>Years</b>	<b>Output according to Sella</b>	<b>Output according to Panciera</b>	<b>Output according to Document</b>
<b>1516-20</b>	2,416.60	2,416.60	2416.6
<b>1521-30</b>	4,183.80	4,183.80	4,120.80
<b>1531-40</b>	5,285.30	5,285.30	5,285.30
<b>1541-50</b>	9,018.50	9,021.50	9021.5
<b>1551-60</b>	13,841.20	13,839.70	13,839.70
<b>1561-70</b>	17,194.60	17,294.50	17,294.50
<b>1571-80</b>	17,840.30	17,749.10	17,749.10
<b>1581-90</b>	19,400.90	19,401.30	19,401.30
<b>1591-1600</b>	22,480.40	22,480.10	22,380.10
<b>1601-10</b>	21,669.10	21,054.10	21,054.10
<b>1611-20</b>	19,283.30	18,809.10	18,800.10
<b>1621-30</b>	16,299.90	16,238.90	16,238.90
<b>1631-40</b>	12,367.70	12,384.80	12,366.80
<b>1641-50</b>	11,290.20	11,295.20	11,295.20
<b>1651-60</b>	9,706.40	9,631.60	9,631.60
<b>1661-70</b>	7,212.20	7,216.10	7,215.20
<b>1671-80</b>	5,281.30	5,281.30	5,281.30
<b>1681-90</b>	2,866.00	2,866.00	2,866.00
<b>1691-1700</b>	2,644.70	2,644.70	2,644.70



<b>Years</b>	<b>Output according to Sella</b>	<b>Output according to Panciera</b>	<b>Output according to Document</b>
<b>1701-10</b>	2,293.00	2,293.00	2,293.00
<b>1711-20</b>		2,080.00	2,080.00
<b>1721-23</b>		1,822.33	1822.33

**Sources:** see the previous table, and n. 87

### List of Sources:

Ashtor, Eliyahu, *Les métaux précieux et la balance des paiements du Proche-Orient à la basse-époque* (Paris, 1971).

Ashtor, Eliyahu, 'The Venetian Supremacy in Levantine Trade: Monopoly or Pre-Colonialism?' *Journal of European Economic History*, 3:1 (Spring 1974), 5 - 53; reprinted in Eliyahu Ashtor, *Studies on Levantine Trade in the Middle Ages*, Variorum Reprints CS74 (London, 1978).

Ashtor, Eliyahu, 'The Volume of Levantine Trade in the Later Middle Ages (1370 - 1498)', *Journal of European Economic History*, 4:3 (Winter 1975), 573 -612, reprinted in Eliyahu Ashtor, *Studies on Levantine Trade in the Middle Ages*, Variorum Reprints CS74 (London, 1978).

Ashtor, Eliyahu, 'Profits from Trade with the Levant in the Fifteenth Century,' *Bulletin of the School of Oriental and African Studies*, 37 (1975), 250-75, reprinted in Eliyahu Ashtor, *Studies on Levantine Trade in the Middle Ages*, Variorum Reprints CS74 (London, 1978).

Ashtor, Eliyahu, 'The Venetian Cotton Trade in Syria in the Later Middle Ages', *Studi Medievali XVII* (Spoleto, 1976), 675-715, reprinted in Eliyahu Ashtor, *Studies on the Levantine Trade in the Middle Ages*, Variorum Reprints (London, 1978), no. VII [same pagination]

Ashtor, Eliyahu, *A Social and Economic History of the Near East in the Middle Ages* (London: Collins, 1976).

Ashtor, Eliyahu, 'L'Apogée du commerce Vénitien au Levant: un nouvel essai d'explication', in *Venezia centro di mediazione tra Oriente e Occidente (secoli XV-XVI): Aspetti e problemi*, Atti dell II Convegno Internazionale di Storia della Civiltà Veneziana, Vol. I (Florence, 1977), pp. 307-26; reprinted in Eliyahu Ashtor, *Technology, Industry and Trade: the Levant versus Europe, 1250 - 1500*, ed. by Benjamin Z. Kedar, Variorum Collected Studies Series CS372 (Ashgate, Croft Road, Hampshire: 1992);

Ashtor, Eliyahu, 'L'exportation de textiles occidentaux dans le Proche Orient musulman au bas Moyen Age (1370-1517), in Luigi de Rosa, ed., *Studi in memoria di Federigo Melis*, 5 vols. (Naples: Giannini, 1978), vol. II, 303-77. [Volume no. improperly cited in Ashtor's own bibliography]

Ashtor, Eliyahu, *Studies on the Levantine Trade in the Middle Ages*, Variorum Collected Studies CS74 (London, 1978).

Ashtor, Eliyahu, 'The Economic Decline of the Middle East during the Later Middle Ages: an Outline', *Asian and African Studies*, 15 (1981), 253-86; reprinted in Eliyahu Ashtor, *Technology, Industry and Trade: the Levant versus Europe, 1250 - 1500*, ed. by Benjamin Z. Kedar, Variorum Collected Studies Series CS372 (Ashgate, Croft Road, Hampshire: 1992).

Ashtor, Eliyahu, *Levant Trade in the Later Middle Ages* (Princeton and Oxford: Princeton University Press, 1983).

Ashtor, Eliyahu, 'Catalan Cloth on the Late Medieval Mediterranean Markets', *Journal of European Economic History*, 17 (Fall 1988), 227-57.

Barkan, Ömer Lûtfî, 'La "Méditerranée" de Fernand Braudel due d'Istamboul', *Annales: Économies, sociétés, civilisations*, 9 (Jan.-March 1954), 189-200.

Basso, Patrizia, Jacopo Bonetto, and Andrea Raffaele Ghiotto, 'Produzione, lavorazione e commercio della lana nella Venetia romana', in Giovanni Luigi Fontana and Gérard Gayot, *Wool: Products and Markets (13<sup>th</sup> - 20<sup>th</sup> Century)* (Padua: Libreria Editrice Università Padova, 2004), pp. 49-78.

Becker, Marvin, *Florence in Transition*, vol. II: *Studies in the Rise of the Territorial State* (Baltimore, 1968).

Bernocchi, Mario, *Le monete della repubblica fiorentina*, 4 vols. (Florence, 1974-78).

Berti, Marcello, *Lana, panni e strumenti contabili nella Toscana bassomedievale e dell prima età moderna* (Lucca, 2000).

Beveridge, Lord William, *Prices and Wages in England from the Twelfth to the Nineteenth Century*, Vol. I: *Price Tables: Mercantile Era* (London: Longman Green, 1939; reissued London: Frank Cass and Co, Ltd., 1965).

Bowden, Peter, 'The Wool Supply and the Woollen Industry', *Economic History Review*, 2nd ser. 9 (1956-57), 44-58.

Bowden, Peter, *The Wool Trade in Tudor and Stuart England* (London, 1962)

Braude, Benjamin, 'International Competition and Domestic Cloth in the Ottoman Empire, 1500 - 1650: A Study in Undevelopment', *Review (Fernand Braudel Center)*, 2:3 (Winter 1979), 437-51.

Benjamin Braude, 'The Rise and Fall of Salonica Woollens, 1500-1650: Technology Transfer and Western Competition', *Mediterranean Historical Review*, 6 (1991), 216-236; reprinted in Alisa Meyuhas Ginio, ed., *Jews, Christians and Muslims in the Mediterranean World after 1492* (London, 1992), pp. 216-236.

Braudel, Fernand, P. Jeannin, J. Meuvret, R. Romano, 'Le déclin de Venise au XVII siècle', in *Aspetti e cause della decadenza veneziana nel secolo XVII: Atti del convegno 27 giugno-2 luglio 1957, Venezia* (Venice-Rome, 1961), pp. 22-85.

Braudel, Fernand, *The Mediterranean and the Mediterranean World in the Age of Philip II*, translated by Sian Reynolds, 2 vols. (London and New York, 1972-73).

Brucker, Gene, 'The Ciompi Revolution', in Nicolai Rubinstein, ed., *Florentine Studies: Politics and Society in Renaissance Florence* (Evanston, 1968), pp. 314-56.

Brulez, Wilfrid, 'L'exportation des Pays Bas vers l'Italie par voie de terre au milieu du XVI<sup>e</sup> siècle', *Annales: ESC*, 14:3 (Jul-Sept 1959), 461-91.

Brulez, Wilfrid, *De firma Della Faille en de internationale handel van Vlaamse Firma's in de 16 eeuw* (Brussels, 1959).

Brulez, Wilfrid, 'Le commerce international des Pays-Bas au XVI siècle: essai d'appréciation quantitative', *Revue belge de philologie et d'histoire*, 46 (1968), 1205-21; republished as 'The Balance of Trade of the Netherlands in the Middle of the 16<sup>th</sup> Century', *Acta historiae neerlandica: Historical studies in the Netherlands*, 4 (Leiden, 1970), 20-48.

Cabo Alonso, Ángel, 'Medio natural y trashumancia en la España peninsular', in Felipe Ruiz Martín and Ángel García Sanz, eds., *Mesta, trashumancia y lana en la España moderna* (Barcelona, 1998), pp. 11-14.

Carrère, Claude, 'Aspects de la production et du commerce de la laine en Aragon au milieu du XVe siècle', in Marco Spallanzani, ed., *La lana come materia prima: I fenomeni della sua produzione e circolazione nei secoli XIII-XVII*, Istituto internazionale di storia economica, Prato, Serie II (Florence, 1974), pp. 205-19.

Carter, H.B., *His Majesty's Spanish Flock: Sir Joseph Banks and the Merinos of George III of England* (London, 1964).

Carus-Wilson, Eleanora M., 'An Industrial Revolution of the Thirteenth Century', *Economic History Review*, 1st series 11 (1941), reprinted in her *Medieval Merchant Venturers: Collected Studies* (London, 1954), pp. 183-211.

Carus-Wilson, Eleanora 'The English Cloth Industry in the Twelfth and Thirteenth Centuries', *Economic History Review*, 1st ser. ,14 (1944); reprinted in Eleanora M. Carus-Wilson, *Medieval Merchant Venturers: Collected Studies* (London, 1954), pp. 211-38.

Carus-Wilson, Eleanora, 'The Woollen Industry', in M.M. Postan and E.E. Rich, eds., *Cambridge Economic History of Europe*, Vol. II: *Trade and Industry in the Middle Ages* (Cambridge, 1952), reissued with very few changes in M. M. Postan and Edward Miller, eds., *The Cambridge Economic History of Europe*, Vol. II: *Trade and Industry in the Middle Ages*, 2nd rev. edn. (Cambridge, 1987), pp. 614-90.

Carus-Wilson, Eleanora , and Olive Coleman, *England's Export Trade, 1275-1547* (Oxford, 1963).

Casale, Benigo, 'The Wool Trade in L'Aquila during the Second Half of the Fifteenth Century', in Giovanni Luigi Fontana and Gérard Gayot, eds., *Wool: Products and Markets (13<sup>th</sup> - 20<sup>th</sup> Century)* (Padua, 2004), pp. 551-72.

Chierici, Patrizia, 'Le fabbriche di pannilana nel Piemonte d' Antico Regime e i rapporti con il Veneto', in Giovanni Luigi Fontana and Gérard Gayot, *Wool: Products and Markets (13<sup>th</sup> - 20<sup>th</sup> Century)* (Padua: Libreria Editrice Università Padova, 2004), pp. 595-606.

Childs, Wendy, *Anglo-Castilian Trade in the Later Middle Ages* (Manchester, 1978).

Childs, Wendy, 'The English Export Trade in Cloth in the Fourteenth Century', in Richard Britnell and John Hatcher, eds., *Progress and Problems in Medieval England: Essays in Honour of Edward Miller* (Cambridge and New York, 1996), pp. 121-47.

Chorley, Patrick, 'The Cloth Exports of Flanders and Northern France During the Thirteenth Century: A Luxury Trade?' *Economic History Review*, 2nd ser. 40:3 (August 1987), 349-79.

Chorley, Patrick, 'English Cloth Exports During the Thirteenth and Early Fourteenth Centuries: the Continental Evidence', *Historical Research: The Bulletin of the Institute of Historical Research*, 61:144 (February 1988), 1-10.

Chorley, Patrick, 'The Evolution of the Woollen, 1300 - 1700', in Negley B. Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10

(Oxford, 1997), pp. 7-34.

Chorley, Patrick, 'Rascie and the Florentine Cloth Industry during the Sixteenth Century', *The Journal of European Economic History*, 32:3 (Winter 2003), 487-526

Chorley, Patrick, 'The Volume of Cloth Production in Florence, 1500-1650: An Assessment of the Evidence', in Giovanni Luigi Fontana and Gérard Gayot, eds., *Wool: Products and Markets (13<sup>th</sup> - 20<sup>th</sup> Century)* (Padua, 2004), pp. 551-72.

Cipolla, Carlo, *Guns, Sails and Empires: Technological Innovation and the Early Phases of European Expansion, 1400-1700* (New York, 1965).

Cipolla, Carlo, 'The Economic Decline of Italy', in Brian Pullan, ed., *Crisis and Change in the Venetian Economy in the Sixteenth and Seventeenth Centuries* (London, 1968), pp. 127 - 45 [Translated by Janet Pullan from 'Il declino economico dell'Italia', in *Storia dell'economica italiana* (Turin: Boringhieri, 1959), which in turn was a revised and expanded version of 'The Decline of Italy: the Case of a Fully Matured Economy', *Economic History Review*, 2nd ser., 5 (1952)].

Ciriaco, Salvatore, 'Mass Consumption Goods and Luxury Goods: the De-Industrialization of the Republic of Venice from the Sixteenth to the Eighteenth Century', in Herman Van der Wee, ed., *The Rise and Decline of Urban Industries in Italy and the Low Countries (Late Middle Ages - Early Modern Times)* (Leuven: Leuven University Press, 1988), pp. 41-61.

Clay, C. G. A., *Economic Expansion and Social Change: England, 1500 - 1700*, Vol. II: *Industry, Trade, and Government* (Cambridge and New York, 1984).

Clementi, Alessandro, *L'arte della lana in una città del regno di Napoli (Secoli XIV - XVI)* (L'Aquila: Japadre Editore, 1979).

Coornaert, Emile, *La draperie-sayerterrie d'Hondschoote, XIVe-XVIIIe siècles* (Paris, 1930).

Coornaert, Emile, *Une industrie urbaine du XIVe au XVIIIe siècle: l'industrie de la laine à Bergues-Saint-Winoc* (Paris, 1930).

Coornaert, Emile, 'Draperies rurales, draperies urbaines: l'évolution de l'industrie flamande au moyenâge et au XVI siècle', *Belgische tijdschrift voor filologie en gescheidenis/Revue belge de philologie et d'histoire*, 28 (1950), 60-96.

Davidsohn, Robert, 'Blüte und Niedergang der Florentiner Tuchindustrie', *Zeitschrift für die gesamte Staatswissenschaft*, 85 (1928), 225-55.

Davis, Ralph, 'England and the Mediterranean, 1570-1670', in F.J. Fisher, ed., *Essays in the Economic and Social History of Tudor and Stuart England* (London, 1961), pp. 117-37.

Davis, Ralph, *The Rise of the English Shipping Industry in the Seventeenth and Eighteenth Centuries* (London, 1962).

Davis, Ralph, *Aleppo and Devonshire Square: English Traders in the Levant in the Eighteenth Century* (London, 1967).

Davis, Ralph, *English Overseas Trade, 1500 - 1700* (London, 1973), pp. 20-31.

De Roover, Raymond, 'A Florentine Firm of Cloth Manufacturers: Management of a Sixteenth-Century Business', *Speculum*, 16 (1941), 3-33; reprinted in his *Business Banking, and Economic Thought in Late Medieval and Early Modern Europe: Selected Studies of Raymond De Roover*, ed., Julius Kirshner (Chicago, 1974), pp. 85-118.

Demo, Edoardo, *L' "Anima della città": L'industria tessile a Verona e Vicenza (1400 - 1550)*, Studi di storia europea protomoderna (Milan, Edizione Unicopli, 2001);

Demo, Edoardo, 'Lane, lanaiola e mercanti nella manifattura laniera Vicentina (secoli XIV-XVI)', in Giovanni Luigi Fontana and Gérard Gayot, eds., *Wool: Products and Markets (13<sup>th</sup> - 20<sup>th</sup> Century)* (Padua, 2004), pp. 382-409;

Demo, Edoardo, 'L'industria tessile nel Veneto tra XV e XVI secolo: tecnologie e innovazione dei prodotti', in Paolo Massa and Angelo Moiola, eds., *Dalla corporazione al mutuo soccorso: organizzazione et tutela del lavoro tra XVI e XX secolo* (Milan, 2004), pp. 329-41.

Demo, Edoardo, '“Da Bressa se traze panni fini e alre sorte de panni de manco precio”: L'esportazione dei prodotti tessile bresciani nel '400', *Annali Queriniani*, 6 (2005), 101-30.

De Vries, Jan, 'Population', in Thomas A. Brady, Heiko Oberman, and James D. Tracy, eds., *Handbook of European History, 1400 - 1600: Late Middle Ages, Renaissance and Reformation*, 2 vols. (Leiden-New York: E.J. Brill, 1994), vol. I: *Structures and Assertions*.

Doehaerd, Renée, ed., *Les relations commerciales entre Gênes, la Belgique, et l'Outremont, d'après les archives notariales génoises aux XIII<sup>e</sup> et XIV<sup>e</sup> siècles*, Institut historique belge de Rome, 3 vols. (Brussels, 1941).

Doren, Alfred, *Studien aus der Florentiner Wirtschaftsgeschichte*, Vol. I: *Die Florentiner Wollentuchindustrie vom XIV. bis zum XVI. Jahrhundert* (Stuttgart, 1901).

Earle, Peter, 'The Commercial Development of Ancona, 1479-1551', *Economic History Review*, 2<sup>nd</sup> ser., 22:1 (April 1969), 28-44.

Edler, Florence, *Glossary of Medieval Terms of Business: Italian Series, 1200-1600* (Cambridge, Mass., 1934).

Edler, Florence, 'Le commerce d'exportation des sayes d'Hondschoote vers Italie d'après la correspondance d'une firme anversoise, entre 1538 et 1544', *Revue du Nord*, 22 (1936), 249-65.

Elbl, Martin, 'The Caravel and the Galleon', in Robert Gardiner, ed., *Conway's History of the Ship*, III: *Cogs, Caravels and Galleons* (London, 1994), pp. 91-98.

Endrei, Walter, and Geoffrey Egan, 'The Sealing of Cloth in Europe, With Special Reference to the English Evidence', *Textile History*, 13 (Spring 1982), 47-76.

Fano, N., 'Ricerca sull'arte della lana a Venezia nel XIII e XIV secolo', *Archivio Vento* (1936), pp. 72-212.

Farmer, Sharon, 'Biffes, Tiretaines, and Aumonières: the Role of Paris in the International Textile Markets of the Thirteenth and Fourteenth Centuries', *Medieval Clothing and Textiles*, 2 (2006), 73-90.

Felloni, Giuseppe, 'Structural Changes in Urban Industry in Italy from the Late Middle Ages to the Beginning of the Industrial Revolution: A Synthesis', in Herman Van der Wee, ed., *The Rise and Decline of Urban Industries in Italy and the Low Countries (Late Middle Ages - Early Modern Times)* (Leuven: Leuven University Press, 1988), pp. 153-60.

Fleet, Kate, *European and Islamic Trade in the Early Ottoman State: the Merchants of Genoa and Turkey*, Cambridge Studies in Islamic Civilization (Cambridge and New York: Cambridge University Press, 1999).

Franceschi, Franco, *Oltre il 'Tumulto': i lavoratori fiorentini dell'Arte della Lana fra Tre e Quattrocento* (Florence, 1993).

Fryde von Stromer, Natalie, 'Stamford Cloth and Its Imitations in the Low Countries and Northern France during the Thirteenth Century', in Erik Aerts and John Munro, eds., *Textiles of the Low Countries in European Economic History*, Proceedings of the Tenth International Economic History Congress, Studies in Social and Economic History, Vol. 19 (Leuven, 1990), pp. 8-13.

Fryde, Edmund, 'Anglo-Italian Commerce in the Fifteenth Century: Some Evidence about Profits and Balance of Trade', *Revue belge de philologie et d'histoire*, 50 (1972), 345-55.

Fryde, Edmund, 'Italian Maritime Trade with Medieval England (c. 1270- c. 1530)', *Recueils de la société Jean Bodin*, 32 (1974), 291-337, reprinted in his *Studies in Medieval Trade and Finance* (London, 1983)

Fryde, Edmund., 'The English Cloth Industry and the Trade with the Mediterranean, c. 1370 - c. 1530', in Marco Spallanzani, ed., *Produzione, commercio e consumo de panni di lana nei secoli XII - XVII*, Istituto internazionale di storia economica 'F. Datini' Prato, Series II: Atti delle 'Settimane di Studio' e altri convegni (Florence, 1976), pp. 343-67, reprinted in his *Studies in Medieval Trade and Finance* (London, 1983).

Garin, Eugenio, ed. , *Il Tumulto dei Ciompi: Un momento di storia fiorentina ed Europea* (Florence, 1981).

Gerbet, Marie-Claude, *L'élevage dans la royaume de Castille sous les rois Catholiques (1454-1516)*, Publications de la Casa de Valázques: Série Études et Documents no. 6 (Madrid, 1991).

Goldthwaite, Richard, and Giulio Mandich, *Studi sulla moneta fiorentina, secoli XIII - XVI* (Florence, 1994).

Goldthwaite, Richard , 'The Florentine Wool Industry in the Late Sixteenth Century: a Case Study', *The Journal of European Economic History*, 32:3 (Winter 2003), 527-54.

Grant, A.J., *History of Europe from 1494 to 1610* , 5<sup>th</sup> edn. (New York, 1951).

Great Britain, Record Commission (T.E. Tomlins, J. Raithby, et. al) eds., *The Statutes of the Realm*, 6 vols. (London, 1810-22)

Heers, Jacques, 'Il commercio nel Mediterraneo alla fine del XIV secolo e nei primi anni del secolo XV', *Archivio storico italiano*, 113 (1955), 192-95.

Herlihy, David, *Medieval and Renaissance Pistoia: The Social History of an Italian Town, 1200-1430* (New Haven: Yale University Press, 1967)

Herlihy, David, 'The Distribution of Wealth in a Renaissance Community: Florence 1427', in Philip Abrams and E.A. Wrigley, ed., *Towns in Societies: Essays in Economic History and Historical Sociology* (Cambridge, 1978), pp. 131-58.

Herlihy, David, and Christiane Klapisch-Zuber, *Tuscans and Their Families: A Study of the Florentine Catasto of 1427* (New Haven and London, 1985).

Holderness, B.A., 'The Reception and Distribution of the New Draperies in England', in Negley Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10 (Oxford and New York, 1997), pp. 217-44.

Hoshino, Hidetoshi, 'Per la storia dell'arte della lana in Firenze nel trecento e nel quattrocento: un riesame', *Annuario dell'Istituto giapponese di Roma*, 10 (1972-73), 33-80.

Hoshino, Hidetoshi, 'La compagnia commerciale de' Pitti in Napoli nel 1341: un commento per la storia dell'arte della lana di Firenze del Trecento', in Luigi de Rosa, ed., *Studi in memoria di Federico Melis*, 5 vols. (Naples: Giannini, 1978), vol. II, 221-38.

Hoshino, Hidetoshi, *L'arte della lana in Firenze nel basso medioevo: il commercio della lana e il mercato dei panni fiorentini nei secoli XIII-XV* (Florence: Olschki Editore, 1980).

Hoshino, Hidetoshi, 'La produzione laniera nel Trecento a Firenze', in Eugenio Garin, ed., *Il Tumulto dei Ciompi: un momento di storia Fiorentina ed Europea* (Florence, 1981), pp. 41-58.

Hoshino, Hidetoshi, 'The Rise of the Florentine Woollen Industry in the Fourteenth Century', in N.B. Harte and K.G. Ponting, eds., *Cloth and Clothing in Medieval Europe*, Pasold Studies in Textile History, no. 2 (London, 1983), pp. 184-204.

Hoshino, Hidetoshi, 'Il commercio della lana e della seta tra Firenze e l'Abruzzo nel basso Medioevo', in Gianni Morlini, ed., *Mercati e consumi: organizzazione e qualificazione del commercio in Italia dal XII al XX secolo*, I° Convegno Nazionale di Storia del Commercio in Italia: Archivio storico dell'industria Italiana: Studi commercio, Istituto Formazione Operatori Aziendali (Bologna: Edizioni Analasi, 1986), pp. 67-78.

Hoshino, Hidetoshi, *Industria tessile e commercio internazionale nella Firenze del tardo Medioevo*, ed. by Franco Franceschi and Sergio Tognetti, Biblioteca storica toscana no. 39 (Florence: Leo S. Olschki, 2001).

Hoshino, Hidetoshi, and Maureen Mazzaoui, 'Ottoman Markets for Florentine Woollen Cloth in the Late Fifteenth Century', *International Journal of Turkish Studies*, 3 (1985-86), 17-31.

İnalçik, Halil, *An Economic and Social History of the Ottoman Empire*, 2 vols. (Cambridge, 1994), I: 1300-1600.



Kaeuper, Richard, *Bankers to the Crown: The Riccardi of Lucca and Edward I* (Princeton, 1973).

Kellenbenz, Hermann, 'The Fustian Industry of the Ulm Region in the Fifteenth and Early Sixteenth Centuries', in Negley B. Harte and Kenneth G. Ponting, eds., *Cloth and Clothing in Medieval Europe: Essays in Memory of Professor E. M. Carus-Wilson*, Pasold Studies in Textile History no. 2 (London, 1983), pp. 259-78.

Klein, Julius, *The Mesta: A Study in Spanish Economic History, 1273-1836* (Cambridge, Mass., 1920).

Krueger, Hilmar, 'The Genoese Exportation of Northern Cloths to Mediterranean Ports, Twelfth Century', *Belgische tijdschrift voor filologie en gescheidenis/Revue belge de philologie et d'histoire*, 65 (1987), 722-50.

Lane, Frederic, *Venetian Ships and Shipbuilders of the Renaissance* (Baltimore, 1934).

Lane, Frederic, 'Cotton Cargoes and Regulations against Overloading', in *Venice and History* (Baltimore: Johns Hopkins University Press, 1966), pp. 253-62.

Lane, Frederic, *Venice: A Maritime Republic* (Baltimore and London: The Johns Hopkins University Press, 1973).

Lane, Frederic, 'Technology and Productivity in Seaborne Transportation', in A. Vannini Marx, ed., *Trasporti e sviluppo economico, secoli XIII - XVIII*, Atta della quinta settimana di studio, Istituto internazionale di storia economica "F. Datini", Prato 1973 (Florence: Le Monnier, 1986), pp. 233-244; republished in Frederic Lane, *Studies in Venetian Social and Economic History*, ed. by Benjamin Kohl and Reinhold Mueller (London: Variorum Reprints, 1987)

Lesage, Georges, *Marseille angevine: recherche sur son evolution administrative économique et urbaine de la victoire de Charles d'Anjou à l'arrivée de Jeanne Ire (1264-1348)* (Paris, 1950).

Lopez, Robert, 'The Origin of the Merino Sheep', *The Joshua Starr Memorial Volume: Studies in History and Philology* (a publication of *Jewish Social Studies* no. 5, New York, 1953), pp. 161-68.

Lopez, Robert, 'Hard Times and Investment in Culture', K.H. Dannenfeldt, ed., *The Renaissance: Medieval or Modern?* (Heath Series, New York, 1959), pp. 50-63.

Lopez, Robert, *The Birth of Europe* (New York, 1967).

Lopez, Robert, *The Commercial Revolution of the Middle Ages, 950-1350* (Cambridge and New York: Cambridge University Press, 1976).

Lopez, Robert, 'The Trade of Medieval Europe: the South', in Michael Postan et al., eds., *The Cambridge Economic History of Europe*, Vol. II: *Trade and Industry in the Middle Ages*, (Cambridge, 1987), pp. 338-412.

Lopez, Robert, and Harry Miskimin, 'The Economic Depression of the Renaissance', *Economic History Review*, 2nd ser. 14 (1962), 408-26.

Lopez, Robert, Harry Miskimin, and Abraham Udovitch, 'England to Egypt, 1350-1400: Long-Term Trends and Long-Distance Trade', in M.A. Cook, ed., *Studies in the Economic History of the Middle*

*East*, (London, 1970), pp. 93-128.

Mainoni, Patrizia, 'Il mercato della lana a Milano dal XIV al XV secolo, prime indagini', in Gianni Morlini, ed.,  *Mercati e consumi: organizzazione e qualificazione del commercio in Italia dal XII al XX secolo*, I° Convegno Nazionale di Storia del Commercio in Italia: Archivio storico dell'industria Italiana: Studi usl commercio, Istituto Formazione Operatori Aziendali (Bologna: Editioni Analasi, 1986), pp. 457-76.

Malanima, Paolo, 'The First European Textile Machine', *Textile History*, 17 (1986), 115 - 28.

Malanima, Paolo, 'An Example of Industrial Reconversion: Tuscany in the Sixteenth and Seventeenth Centuries', in Herman Van der Wee, ed., *The Rise and Decline of Urban Industries in Italy and the Low Countries (Late Middle Ages - Early Modern Times)* (Leuven: Leuven University Press, 1988), pp. 63-74.

Mann, Julia de Lacey, *The Cloth Industry in the West of England from 1640 to 1880* (Oxford, 1971).

Martin, Luc, 'The Rise of the New Draperies in Norwich', in Negley Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10 (Oxford and New York, 1997), pp. 245-74.

Mazzaoui, Maureen, *The Italian Cotton Industry in the Later Middle Ages, 1100 - 1600* (Madison, 1981).

Mazzaoui, Maureen, 'The Cotton Industry of Northern Italy in the Late Middle Ages, 1150 - 1450', *Journal of Economic History*, 32 (1972), 262-86.

McCusker, John, and Cora Gravesteijn, *The Beginnings of Commercial and Financial Journalism: The Commodity Price Currents, Exchange Rate Currents, and Money Currents of Early Modern Europe*, NEHA-Series III (Amsterdam, 1991).

Melis, Federigo, 'Uno sguardo al mercato dei panni di lana a Pisa nella seconda metà del trecento', *Economia e storia*, 6:1 (March 1959), 321-65.

Melis, Federigo, 'La diffusione nel Mediterraneo occidentale dei panni di Wervicq e delle altre città della Lys attorno al 1400', in *Studi in onore di Amintore Fanfani*, Vol. III: Medioevo (Milan, 1962), pp. 219-43.

Melis, Federigo, *Aspetti della vita economica medievale: studi nell'archivio Datini di Prato*, Vol. I (Florence, 1962), part 5: 'L'industria laniera', pp. 455-729.

Melis, Federigo, 'La lana della Spagna mediterranea e della Barberia occidentale', in Marco Spallanzani, ed., *La lana come materia prima: I fenomeni della sua produzione e circolazione nei secoli XIII-XVII*, Istituto internazionale di storia economica, Prato, Serie II (Florence, 1974), pp. 241-51.

Menard, Russell, 'Transport Costs and Long-Range Trade, 1300 - 1800: Was There a European 'Transport Revolution' in the Early Modern Era?' in James Tracy, ed., *The Political Economy of Merchant Empires: State Power and World Trade, 1350 - 1750* (Cambridge, 1991), pp. 228 - 75.

Miskimin, Harry, 'Monetary Movements and Market Structures: Forces for Contraction in 14th and 15th Century England', *Journal of Economic History*, 24 (1964), 470-90; reprinted in Harry A. Miskimin,

*Cash, Credit, and Crisis in Europe, 1300-1600* (London: Variorum Reprints, 1989), no. VII.

Miskimin, Harry, *The Economy of Early Renaissance Europe, 1300-1460* (1969; reissued Cambridge, 1976).

Moioli, Angelo, 'De-Industrialization in Lombardy during the Seventeenth Century', in Herman Van der Wee, ed., *The Rise and Decline of Urban Industries in Italy and the Low Countries (Late Middle Ages - Early Modern Times)* (Leuven: Leuven University Press, 1988), pp. 75-119.

Molà, Luca, *The Silk Industry of Renaissance Venice* (Baltimore and London: The Johns Hopkins University Press), pp. 55-160.

Mozzatao, Andrea, ed., *La mariegola dell'arte della lana di Venezia (1244 - 1595)*, Comitato per la pubblicazione della fonti relative all storia di Venezia, Fonti per la storia di Venezia, sez. V - Fondi Vari, 2 vols. (Venice: Il Comitato Editore, 2002)

Mozzato, Andrea, 'Il mercato dei panni de lana a Venezia nel primo ventennio del XV secolo', in Giovanni Luigi Fontana and Gérard Gayot, *Wool: Products and Markets (13<sup>th</sup> - 20<sup>th</sup> Century)* (Padua: Libreria Editrice Università Padova, 2004), pp. 1035-1066.

Mun, Thomas, *England's Treasure by Forraign Trade [1664]* (reissued Oxford, 1937). Munro, John, *Wool, Cloth and Gold: The Struggle for Bullion in Anglo-Burgundian Trade, ca. 1340-1478* (Brussels and Toronto, 1973).

Munro, John H., 'Bruges and the Abortive Staple in English Cloth: An Incident in the Shift of Commerce from Bruges to Antwerp in the Late Fifteenth Century', *Revue belge de philologie et d'histoire/Belgisch tijdschrift voor filologie en geschiedenis*, 44 (1966), 1137-59.

Munro, John H., *Wool, Cloth and Gold: The Struggle for Bullion in Anglo-Burgundian Trade, ca. 1340-1478* (Brussels, 1973).

Munro, John, 'Industrial Protectionism in Medieval Flanders: Urban or National?' in David Herlihy, H.A. Miskimin, and A. Udovitch, eds., *The Medieval City* (London and New Haven, 1977), pp. pp. 229-67. Reprinted in John Munro, *Textiles, Towns, and Trade: Essays in the Economic History of Late-Medieval England and the Low Countries*, Variorum Collected Studies series CS 442 (London, 1994).

Munro, John, 'Wool Price Schedules and the Qualities of English Wools in the Later Middle Ages', *Textile History*, 9 (1978), 118-69. Reprinted in John Munro, *Textiles, Towns, and Trade: Essays in the Economic History of Late-Medieval England and the Low Countries*, Variorum Collected Studies series CS 442 (London, 1994).

Munro, John, 'The Medieval Scarlet and the Economics of Sartorial Splendour', in Negley B. Harte and Kenneth G. Ponting, eds., *Cloth and Clothing in Medieval Europe: Essays in Memory of Professor E. M. Carus-Wilson*, Pasold Studies in Textile History No. 2 (London: The Pasold Research Fund and Heinemann Educational Books, 1983), pp. 13-70. Reprinted in John Munro, *Textiles, Towns, and Trade: Essays in the Economic History of Late-Medieval England and the Low Countries*, Variorum Collected Studies series CS 442 (London, 1994).

Munro, John, 'Textile Technology', and 'Textile Workers', in Joseph R. Strayer, et al., eds., *The Dictionary of the Middle Ages*, Vol. XI (New York, 1988), pp. 693-715. Reprinted in John Munro,

*Textiles, Towns, and Trade: Essays in the Economic History of Late-Medieval England and the Low Countries*, Variorum Collected Studies series CS 442 (London, 1994).

Munro, John, 'Urban Regulation and Monopolistic Competition in the Textile Industries of the Late-Medieval Low Countries', in Erik Aerts and John Munro, eds., *Textiles of the Low Countries in European Economic History, Studies in Social and Economic History*, Vol. 19 (Leuven, 1990), pp. 41 - 52. Reprinted in John Munro, *Textiles, Towns, and Trade: Essays in the Economic History of Late-Medieval England and the Low Countries*, Variorum Collected Studies series CS 442 (London, 1994).

Munro, John, 'The Central European Mining Boom, Mint Outputs, and Prices in the Low Countries and England, 1450 - 1550', in Eddy H.G. Van Cauwenberghe, ed., *Money, Coins, and Commerce: Essays in the Monetary History of Asia and Europe (From Antiquity to Modern Times)*, Studies in Social and Economic History (Leuven, 1991), pp. 119 - 83.

Munro, John, 'Industrial Transformations in the North-West European Textile Trades, c. 1290 - c. 1340: Economic Progress or Economic Crisis?' in Bruce M. S. Campbell, ed., *Before the Black Death: Studies in the 'Crisis' of the Early Fourteenth Century* (Manchester and New York, 1991), pp. 110 - 48. Reprinted in John Munro, *Textiles, Towns, and Trade: Essays in the Economic History of Late-Medieval England and the Low Countries*, Variorum Collected Studies series CS 442 (London, 1994).

Munro, John, 'Industrial Entrepreneurship in the Late-Medieval Low Countries: Urban Draperies, Fullers, and the Art of Survival', in Paul Klep and Eddy Van Cauwenberghe, eds., *Entrepreneurship and the Transformation of the Economy (10th - 20th Centuries): Essays in Honour of Herman Van der Wee* (Leuven, 1994), pp. 377-88.

Munro, John H., 'Patterns of Trade, Money, and Credit', in James Tracy, Thomas Brady Jr., and Heiko Oberman, eds., *Handbook of European History in the Later Middle Ages, Renaissance and Reformation, 1400 - 1600*, Vol. I: *Structures and Assertions* (Leiden: E.J. Brill, 1994), pp. 147-95.

Munro, John H., 'Anglo-Flemish Competition in the International Cloth Trade, 1340 - 1520', *Publication du centre européen d'études bourguignonnes*, 35 (1995), 37-60 [*Rencontres d'Oxford (septembre 1994): L'Angleterre et les pays bas bourguignonnes: relations et comparaisons, XVe - XVIe siècle*, ed. Jean-Marie Cauchies].

Munro, John, 'The Origins of the English 'New Draperies': The Resurrection of an Old Flemish Industry, 1270 - 1570', in Negley Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10 (Oxford and New York, 1997), pp. 35-127.

Munro, John, 'The Symbiosis of Towns and Textiles: Urban Institutions and the Changing Fortunes of Cloth Manufacturing in the Low Countries and England, 1270 -1570', *The Journal of Early Modern History: Contacts, Comparisons, Contrasts*, 3:1 (February 1999), 1-74.

Munro, John, 'The 'Industrial Crisis' of the English Textile Towns, 1290 - 1330', in Michael Prestwich, Richard Britnell, and Robin Frame, eds., *Thirteenth-Century England*, VII (Woodbridge, 1999), pp. 103-41.

Munro, John, 'The Low Countries' Export Trade in Textiles with the Mediterranean Basin, 1200-1600: A Cost-Benefit Analysis of Comparative Advantages in Overland and Maritime Trade Routes', *The International Journal of Maritime History*, 11:2 (Dec. 1999), 1 - 30.

Munro, John, 'The "New Institutional Economics" and the Changing Fortunes of Fairs in Medieval and Early Modern Europe: The Textile Trades, Warfare, and Transaction Costs', *Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte*, 88:1 (2001), 1 - 47.

Munro, John, 'Gold, Guilds, and Government: The Impact of Monetary and Labour Policies on the Flemish Cloth Industry, 1390-1435', *Jaarboek voor middeleeuwse geschiedenis*, 5 (2002), 153 - 205.

Munro, John, 'Medieval Woollens: Textiles, Textile Technology, and Industrial Organisation, c. 800 - 1500', in David Jenkins, ed., *The Cambridge History of Western Textiles*, 2 vols. (Cambridge and New York: Cambridge University Press, 2003), Vol. I, pp. 181-227.

Munro, John, 'Medieval Woollens: The Western European Woollen Industries and their Struggles for International Markets, c.1000 - 1500', in David Jenkins, ed., *The Cambridge History of Western Textiles*, 2 vols. (Cambridge and New York: Cambridge University Press, 2003), Vol. I, pp. 181-227.

Munro, John, 'The Monetary Origins of the "Price Revolution:" South German Silver Mining, Merchant-Banking, and Venetian Commerce, 1470-1540', in Dennis Flynn, Arturo Giráldez, and Richard von Glahn, eds., *Global Connections and Monetary History, 1470 - 1800* (Aldershot and Brookfield, 2003), pp. 1-34.

Munro, John H., 'Industrial Energy from Water-Mills in the European Economy, 5<sup>th</sup> to 18<sup>th</sup> Centuries: the Limitations of Power', in Simonetta Cavaciocchi, ed., *Economia ed energia, secoli XIII - XVIII*, Atti delle 'Settimane di Studi' e altre Convegni, Istituto Internazionale di Storia Economica, 'Francesco Datini da Prato', vol. 34 (Florence, 2003), pp. 223-69.

Munro, John, 'The Medieval Origins of the Financial Revolution: Usury, *Rentes*, and Negotiability', *The International History Review*, 25:3 (September 2003), 505-62.

Munro, John H., 'Wage Stickiness, Monetary Changes, and Real Incomes in Late-Medieval England and the Low Countries, 1300 - 1500: Did Money Matter?' *Research in Economic History*, 21 (2003), 185 - 297.

Munro, John, 'Spanish *Merino* Wools and the *Nouvelles Draperies*: an Industrial Transformation in the Late Medieval Low Countries', *The Economic History Review*, 2<sup>nd</sup> ser., 58:3 (August 2005), 431-84.

Munro, John, 'Changing Patterns of Colours and Values of Woollen Textiles in the Southern Low Countries, 1300 - 1550: The Anti-Red Shift -- to the Dark Side', *Medieval Clothing and Textiles*, 3 (2007): forthcoming.

Munro, John, 'The Price Revolution', in Steven N. Durlauf and Lawrence E. Blume, eds., *The New Palgrave Dictionary of Economics*, 2<sup>nd</sup> edition, 6 vols. (London and New York: Palgrave Macmillan, forthcoming).

Muthesius, Anna, 'Silk in the Medieval World', in David Jenkins, ed., *The Cambridge History of Western Textiles*, 2 vols. (Cambridge, 2003), vol. I, pp. 325-54.

Najemy, John, '*Audiant Omnes Artes*: Corporate Origins of the Ciompi Revolution', Eugenio Garin, ed., *Il Tumulto dei Ciompi: Un momento di storia fiorentina ed Europea* (Florence, 1981), pp. 59-93;

Nef, John U., 'Silver Production in Central Europe, 1450-1618', *Journal of Political Economy*, 49

(1941), 575-91

Nef, John U., 'Mining and Metallurgy in Medieval Civilization', in M.M. Postan, ed., *Cambridge Economic History of Europe*, Vol. II: *Trade and Industry in the Middle Ages* (Cambridge, 1952), pp. 456-69; reissued in M.M. Postan and Edward Miller, eds., *The Cambridge Economic History of Europe*, Vol. II: *Trade and Industry in the Middle Ages*, revised edn. (1987), pp. 696-734.

Nightingale, Pamela, 'Monetary Contraction and Mercantile Credit in Later Medieval England,' *Economic History Review*, 2nd ser. 43 (November 1990), 560 - 75.

Noordegraaf, Leo, 'The New Draperies in the Northern Netherlands, 1500-1800', in Negley Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10 (Oxford and New York, 1997), pp. 173-95.

North, Douglass, and Robert Thomas, *The Rise of the Western World: A New Economic History* (Cambridge, 1973).

North, Douglass, *Structure and Change in Economic History* (New York, 1981).

North, Douglass, 'Government and the Cost of Exchange in History', *Journal of Economic History*, 44 (1984), 255-64.

North, Douglass, 'Transaction Costs in History', *Journal of European Economic History*, 14 (1985), 557-76.

Origo, Iris, *The Merchant of Prato: Francesco di Marco Datini* (London, 1957).

Ormrod, Mark, 'The Crown and the English Economy, 1290-1348', in Bruce M. S. Campbell, ed., *Before the Black Death: Studies in the 'Crisis' of the Early Fourteenth Century* (Manchester and New York, 1991), pp. 149-83.

Pagano de Divitiis, Giglio, *Mercanti inglesi nell'Italia del Seicento: Navi, traffici, egemonie* (Venice: Marsilio Editore), 1990; republished as *English Merchants in Seventeenth-Century Italy*, trans. by Stephen Parkin, Cambridge Studies in Italian History and Culture (Cambridge: University Press, 1997).

Pamuk, Şevket, *A Monetary History of the Ottoman Empire*, Cambridge Studies in Islamic Civilization (Cambridge and New York: Cambridge University Press, 2000).

Panciera, Walter, *L'Arte matrice: I lanifici della Repubblica di Venezia nei secoli XVII e XVIII*, Studi veneti, no. 5 (Treviso: Fondazione Benetton Studi Ricerche and Canova Editrice, 1996)

Panciera, Walter, 'Qualità e costi di produzione nei lanifici veneti (secoli XVI-XVIII)', in Giovanni Luigi Fontana and Gérard Gayot, eds., *Wool: Products and Markets (13<sup>th</sup> - 20<sup>th</sup> Century)* (Padua: Libreria Editrice Università Padova, 2004), pp. 419-446

Pastor de Togneri, Reyna, 'La lana en Castilla y León antes de la organizacion de la Mesta', *Moneda y crédito*, no. 112 (March 1970), 47-70, reprinted in Spallanzani, *La lana come materia prima*, pp. 253-67.

Philips, Carla Rahn and William Phillips, *Spain's Golden Fleece: Wool Production and the Wool Trade from the Middle Ages to the Nineteenth Century* (Baltimore and London, 1997).

- Pritchard, Frances, 'The Uses of Textiles, c. 1000 - 1500', in David Jenkins, ed., *The Cambridge History of Western Textiles* (Cambridge, 2003), vol. I, pp. 355-77.
- Phelps Brown, E.H., and Sheila V. Hopkins, 'Seven Centuries of Building Wages,' *Economica*, 22:87 (August 1955), 195-206; reprinted in E.M. Carus-Wilson, ed., *Essays in Economic History*, 3 vols. (London, 1954-62), vol. II, 168-78, and in E.H. Phelps Brown and Sheila V. Hopkins, *A Perspective of Wages and Prices* (London, 1981), pp. 1-12.
- Phelps Brown, E.H., and Sheila V. Hopkins, 'Seven Centuries of the Prices of Consumables, Compared with Builders' Wage Rates', *Economica*, 23:92 (November 1956), 296-314; reprinted in E.M. Carus-Wilson, ed., *Essays in Economic History*, 3 vols. (London, 1954-62), vol. II, pp. 179-96, and in E.H. Phelps Brown and Sheila V. Hopkins, *A Perspective of Wages and Prices* (London, 1981), pp. 13-59.
- Phelps Brown, E.H. and Sheila V. Hopkins, *A Perspective of Wages and Prices* (London, 1981).
- Pullan, Brian, 'Wage Earners and the Venetian Economy, 1550-1630', *Economic History Review*, 2nd ser., 16:2 (1964), 407-26; reprinted in Brian Pullan, ed., *Crisis and Change in the Venetian Economy in the Sixteenth and Seventeenth Centuries* (London, 1968), pp. 146-74.
- Pullen, Brian, *A History of Early Renaissance Italy, from the Mid-Thirteenth to the Mid-Fifteenth Century* (London, 1973).
- Ramsay, George D., *The Wiltshire Woollen Industry in the Sixteenth and Seventeenth Centuries* (London, 1943; 2nd ed. 1965).
- Rapp, Richard, 'The Unmaking of the Mediterranean Trade Hegemony: International Trade Rivalry and the Commercial Revolution', *Journal of Economic History* 35 (1975), 499-525.
- Rapp, Richard, *Industry and Economic Decline in Seventeenth-Century Venice* (Cambridge, 1976).
- Reed, Clyde, 'Transactions Costs and Differential Growth in Seventeenth Century Western Europe', *Journal of Economic History*, 33 (March 1973), 177 - 90.
- Reynolds, R. L., 'The Market for Northern Textiles in Genoa, 1179-1200', *Belgische tijdschrift voor filologie en gescheidenis/Revue belge de philologie et d'histoire*, 8 (1929), 831-50.
- Rossini, Egidio, and Maureen Mazzaoui, 'Società e tecnica nel medioevo: La produzione dei panni di lana a Verona nei secoli XIII-XIV-XV', *Atti e memorie della Accademia di Agricoltura, Scienze e Lettere di Verona*, 6th ser., 21 (1969-70), 571-624.
- Rubinstein, Nicolai, ed., *Florentine Studies: Politics and Society in Renaissance Florence* (Evanston, 1968).
- Rubinstein, Nicolai, 'Il regime politico di Firenze dopo il Tumulto dei Ciompi', in Eugenio Garin, ed., *Il Tumulto dei Ciompi: Un momento di storia fiorentina ed Europea* (Florence, 1981), pp. 105-24.
- Rutenberg, Victor, 'I Ciompi nel 1378', in Eugenio Garin, ed., *Il Tumulto dei Ciompi: Un momento di storia fiorentina ed Europea* (Florence, 1981), pp. 1-12.
- Sansone, Giuseppe, and Giulio Curà, eds., *Giovanni Villani: La "Nouva Cronica"* (Rome, 2002)

Santoro, Caterina Caterina , *Gli uffici del comune dei Milano de del dominio visconteo-sforzesco (1216-1515)*, Archivio della Fondazione italiana per la storia amministrativa, vol. 7 (Milan, 1968).

Sapori, Armando, *Una compagnia di calimala ai primi del trecento*, Biblioteca storica toscana vol. 7 (Florence, 1932).

Sardella, Pierre, 'L'Épanouissement industriel de Venise au XVI<sup>e</sup> siècle: Un beau texte inédit', *Annales: Économies, sociétés, civilisations*, 2:3 (April-June 1947), 195-96.

Schevill, Ferdinand , *History of Florence: from the Founding of the City through the Renaissance* (New York, 1936).

Sella, Domenico, *Commerci e industrie a Venezia nel secolo XVII* (Venice-Rome, 1961).

Sella, Domenico, 'Crisis and Transformation in Venetian Trade', in Brian Pullan, ed., *Crisis and Change in the Venetian Economy in the Sixteenth and Seventeenth Centuries* (London, 1968), pp. 88-105; translated by the author, also in a revised and expanded form, from 'Il declino dell'emporio realtino', in *La civiltà veneziana nell'età barocca* (Venice, 1959).

Sella, Domenico, 'Rise and Fall of the Venetian Woollen Industry', in Brian Pullan, ed., *Crisis and Change in the Venetian Economy in the Sixteenth and Seventeenth Centuries* (London, 1968), pp. 106-26; translated by the author, in a revised and expanded form, from 'Les mouvements longs de l'industrie lainière à Venise', *Annales: Économies, sociétés, civilisations*, 12 (1957), 29 - 45.

Soly, Hugo, and Alfons Thijs, 'Nijverheid in de zuidelijke Nederlanden', in J.A. Van Houtte, et al., eds., *Algemene geschiedenis der Nederlanden*, 12 vols. (Haarlem, 1977-1979), Vol. 6, pp. 27-57.

Spufford, Peter, *Handbook of Medieval Exchange* (London: Royal Historical Society, 1986)

Spufford, Peter, *Money and Its Use in Medieval Europe* (Cambridge, 1988).

Stabel, Peter, 'Les draperies urbaines en Flandre au XIII<sup>e</sup> - XVI<sup>e</sup> siècles', in in Giovanni Luigi Fontana and Gérard Gayot, *Wool: Products and Markets (13<sup>th</sup> - 20<sup>th</sup> Century)* (Padua: Libreria Editrice Università Padova, 2004), pp. 355-80.

Stoockly, Doris, *Le système de l'Incanto des galées du marché à Venise (fin XIII<sup>e</sup>-milieu XV<sup>e</sup> siècle)* (Leiden and New York, 1995).

Stromer, Wolfgang, 'Wirtschaftspolitik im Spätmittelalter: Die Gründung der Baumwoll-Industrie in Oberungarn in Jahr 1411', Luigi de Rosa, ed., *Studi in memoria di Federigo Melis*, 5 vols. (Naples: Giannini, 1978), vol. III, 245-70.

Stromer, Wolfgang von, *Die Gründung der Baumwollindustrie im Mitteleuropa: Wirtschaftspolitik im Spätmittelalter* (Stuttgart, 1978).

Tenenti, A., and C. Vivanti, 'Le film d'un grand système de navigation: les galères marchandes vénitiennes, XIV<sup>e</sup>-XV<sup>e</sup> siècles', *Annales: Économies, sociétés, civilisations*, 16 (1961), 83-86.

Thijs, Alfons, 'Les textiles au marché anversois au XVI<sup>e</sup> siècle', in Erik Aerts and John Munro, eds., *Textiles of the Low Countries in European Economic History*, Proceedings of the Tenth International



Economic History Congress, *Studies in Social and Economic History*, Vol. 19 (Leuven, 1990), pp. 76-86,

Unger, Richard, *The Ship in the Medieval Economy, 600-1600* (London and Montreal, 1980).

Unger, Richard, 'Warships and Cargo Ships in Medieval Europe', *Technology and Culture*, 22 (April 1981), 233 - 52.

Usher, Abbott Payton, *Industrial History of England* (New York, 1920).

Van der Wee, Herman, *Growth of the Antwerp Market and the European Economy, 14th to 16th Centuries*, 3 vols. (The Hague, 1963).

Van der Wee, Herman, 'Anvers et les innovations de la technique financière aux XVIe et XVIIe siècles', *Annales: E.S.C.*, 22 (1967), 1067-89, republished as 'Antwerp and the New Financial Methods of the 16th and 17th Centuries', in Herman Van der Wee, *The Low Countries in the Early Modern World*, trans. by Lizabeth Fackelman, Variorum Series (Aldershot, 1993), pp. 145-66

Van der Wee, Herman, and Theo Peeters, 'Un modèle dynamique de croissance interseculaire du commerce mondiale, XIIIe-XVIIIe siècles', *Annales: E.S.C.*, 15 (1970), 100-28.

Van der Wee, Herman, 'Monetary, Credit, and Banking Systems', in E.E. Rich and Charles Wilson, eds., *The Cambridge Economic History of Europe*, Vol. V: *The Economic Organization of Early Modern Europe* (Cambridge, 1977), pp. 290-392.

Van der Wee, Herman, 'Structural Changes in European Long-Distance Trade, and Particularly in the Re-export Trade from South to North, 1350-1750', in James Tracy, ed., *The Rise of Merchant Empires: Long-Distance Trade in the Early Modern World, 1350-1750* (Cambridge, 1990), pp. 14-33.

Van der Wee, Herman, and Jan Materné, 'Antwerp as a World Market in the Sixteenth and Seventeenth Centuries', in J. Van der Stock, ed., *Antwerp: Story of a Metropolis, 16th- 17th Century* (Gent, 1993), pp. 19-31

Van der Wee, Herman (with John Munro), 'The Western European Woollen Industries, 1500-1700', in David Jenkins, ed., *The Cambridge History of Western Textiles* (Cambridge and New York, 2003), pp. 397-472.

Villani, Giovanni, *Nouva Cronica*, ed. Giuseppe Porta, 3 vols. (Parma, 1990-91).

Waugh, W. T., 'Germany: Charles IV', in J.R. Tanner, C.W. Previté-Orton, Z. N. Brooke, eds., *The Cambridge Medieval History*, vol. VII: *Decline of Empire and Papacy* (Cambridge and New York: Cambridge University Press, 1958), pp. 137-54.

Williams, N.J., 'Two Documents Concerning the New Draperies', *Economic History Review*, 2<sup>nd</sup> ser., 4:3 (1952), 353-58.

Wilson, Charles, 'Cloth Production and International Competition in the Seventeenth Century', *Economic History Review*, 2<sup>nd</sup> ser., 13:2 (1960), 209-21; reprinted in Charles Wilson, *Economic History and the Historian: Collected Essays* (London, 1969), pp. 94-113.

Wyrozumski, Jerzy, 'The Textile Trade of Poland in the Middle Ages', in Negley B. Harte and Kenneth

G. Ponting, eds., *Cloth and Clothing in Medieval Europe: Essays in Memory of Professor E. M. Carus-Wilson*, Pasold Studies in Textile History no. 2 (London, 1983), pp. 248 - 57.