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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 Relazione economiche tra Europa e mondo islamico, seccoli XIII - XVIII, ed. Simonetta Cavaciocchi

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RELAZIONI ECONOMICHE TRA EUROPA E MONDO ISLAMICO SECC. XIII-XVIII
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EUROPE'S ECONOMIC RELATIONS WITH THE ISLAMIC WORLD 13TH - 18TH CENTURIES
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ESTRATTO

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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

A recurrent and indeed persistent problem in European economic history -- a veritable *deus ex machina* -- from medieval to modern times – is Europe's supposed 'balance of payments' problem in trade with the 'East', especially with the Islamic 'East'. The nature of the problem has strongly Mercantilist overtones to it: i.e., the Mercantilist view that precious metals – gold and silver – are not just mediums of exchange but wealth (store of value), the most tangible form of wealth, and the key to gaining and maintaining national power. So often, in the historical literature, precious metal exports have been viewed as a serious drainage of Europe's veritable life-blood. That very viewpoint has influenced, indeed pervaded, the way in which many historians have interpreted much of European economic history, from medieval to early-modern times.

The best example is the current literature on the debate about the supposed late-medieval 'great depression'. For such notable economic historians as Robert Lopez, Harry Miskimin, John Day, and Peter Spufford have argued that the economic contraction and, in their view, veritable 'economic depression' in the later fourteenth and fifteenth centuries was either caused or certainly greatly exacerbated by a supposedly increased outflow of precious metals to the 'East'.[1] Miskimin is particularly ingenious in arguing that, al-

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[1] H. MISKIMIN, *Monetary Movements and Market Structures: Forces for Contraction in 14th and 15th Century England*, in "Journal of Economic History", 24, 1964, pp. 470-490; reprinted in IDEM, *Cash, Credit, and Crisis in Europe, 1300-1600,* London 1989 (Variorum Reprints), no. VII; IDEM, *The Economy of Early Renaissance Europe, 1300-1460,* 1969; reissued Cambridge 1976, pp. 25-32, 132-150; R. LOPEZ, H. MISKIMIN, *The Economic Depression of the Renaissance*, in "Economic History Review"*,* 2nd ser., 14, 1962, pp. 408-426; R.S. LOPEZ, H.A. MISKIMIN, A.L. UDOVITCH, *England to Egypt, 1350-1500: Long-Term Trends and Long-Distance Trade*, in *Studies in the Economic History of the Middle East*, ed. M.A. COOK, London 1970, pp. 93-128; J. DAY, *The Great Bullion Famine of the Fifteenth Century*, in "Past and Present", 79, May 1978, pp. 1-54; reprinted in IDEM,

though the 'depression' commenced with falling population, especially after the Black Death, the economic consequences, with changes in relative prices, then led to a net outflow of precious metals from northern Europe to Italy, whose Mediterranean trade then led to the outflow of an even greater stock of precious metals to the Levant, and ultimately to Asia (though, in his view, that net 'outflow' also involved European trade with the eastern Baltic and Russia).

As a supposed monetarist who deals with these very problems, I believe that such a thesis concerning bullion outflows, in financing deficits in Europe's balance of payments with the 'East', gives 'monetarism' a bad name. That may be surprising to some, for I have certainly published a great deal on late-medieval monetary problems, particularly on the related debate concerning the so-called 'bullion famines'. I must, therefore, re-assert my major conclusions. Late-medieval Europe did experience some *periodic* scarcities of coined money — i.e. , when the circulating coined money supply was scarce relative to the transactions demand for money – especially during these three periods, which were also distinctly deflationary periods: ca. 1320-ca.1340, ca. 1370-ca. 1420, and ca. 1440-ca. 1470.

The nature and problems of monetary scarcity and deflation in late-medieval Europe

I found, however, no compelling evidence that such periodic monetary scarcities were due to any pronounced increase in the outflow of bullion in European trade and payments balances with the 'East'. Even if the least-squares regression trend line of the value of aggregate mint outputs in both England and the Low Countries is steeply downward (and with almost identical 'b' co-efficients), as would be fully expected with a continuous decline in population, to about 1520, the variations from the trend line do not seem consistent with a thesis of worsening deficit in Europe's balance of payments (i.e., with the 'East').[2] In sum, no one has yet proven that the European econ-

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The Medieval Market Economy, Oxford 1987 (Basil Blackwell), pp. 1-54; IDEM, *Crises and Trends in the Late Middle Ages*, [Translation of IDEM, *Crisi e congiunture nei secoli XIV e XV*, in *La Storia: I grandi problemi,* Turin 1988]; republished in IDEM, *The Medieval Market Economy*, pp. 185-224; P. Spufford, *Money and Its Use in Medieval Europe*, Cambridge 1988, Part III: 'The Late Middle Ages,' pp. 267-396; and in particular, chapter 15: 'The Bullion-Famines of the Later Middle Ages,' pp. 339-362.

[2] See the evidence in J. MUNRO, *Bullion Flows and Monetary Contraction in Late-Medieval England and the Low Countries*, in *Precious Metals in the Later Medieval and Early Modern Worlds*, ed. J.F. RICHARDS, Durham North Carolina 1983 (Carolina Academic Press), pp. 97-158, but especially pp. 112-126, Appendix, pp. 127-155, and Graphs I-III, pp. 156-158. Reprinted in IDEM, *Bullion Flows and Monetary Policies in England and the Low Countries, 1350-1500*, Aldershot-Brookfield 1992 (Ashgate Publishing Ltd., Variorum Collected Studies series CS 355).

omy suffered from any *relatively* larger loss of precious metals in its international trade: not when we consider that it had become so much smaller, with declining population, over the course of the fourteenth and fifteenth centuries, with, consequently, a contracting demand for money.

Instead, in my view, there were two other, much more compelling factors to explain periodic and relative scarcities of coined money. The first was a periodic if often chronic reduction in the income velocity of money, combined with very closely related hoarding.[3] As I have contended in several publications, the ever increasing stain of warfare across the Mediterranean basin and western Europe from the 1290s, leading into the far better known Hundred Years' War (1337-1453), so often financed by coinage debasements, and accompanied by rising taxation, trade bans and other commercial barriers, had three far-reaching consequences for the European economy in the next two centuries. The first was a marked increase in transportation and transactions costs in international trade; the second, and closely related consequence, was a set of various impediments to the flow of bullion and specie in that trade; the third was the development of proto-Mercantilist bullionist policies, reflecting or inspired by those impediments, that were designed to prevent or curb the export of precious metals and encourage their inflow (more specifically into the ruler's mints). Those policies merely severely to exacerbate international conflicts and to promote more coinage debasements – and the operations of Gresham's Law – further reducing the circulation and income velocity of money. In other words impediments to the flow of money were more important than reductions in the stock of metals.[4]

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[3] The income velocity of money is V in the modernized Fisher-Friedman Equation of Exchange, the best known version of the Quantity Theory of money: $M.V = P.y$. Hoarding is represented by k in the Cambridge Cash Balances demand-for-money theory: $M = k.P.y$. In both equations M stands for the current stock of money (however defined); P stands for the Price level (Consumer Price Index); and y stands for real (deflated) net national product and net national income, in the Keynesian equation: $Y = C + I + G + (X - M)$: i.e., national income (current money) is the sum of aggregate consumption, investment, government expenditures and net exports (total exports minus imports, including services). Mathematically, therefore, V and k are reciprocals: $k = 1/V$. But k is also a measure of Keynesian Liquidity Preference, as the sum of the public's desire to hold active cash balances, instead of investing or spending them, for these three motives, explaining the demand for money in general: the transactions-demand motive, the precautionary motive, and the speculative or investment motive..

[4] See the sources cited in n. 2 above. For a different view, see J. 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*, in "The International Journal of Maritime History", 11, 1999. 2, pp. 1-30; IDEM, *The "New Institutional Economics" and the Changing Fortunes of Fairs in Medieval and Early Modern Europe: the Textile Trades, Warfare, and Transaction Costs*, in "Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte", 88, 2001, 1, pp. 1-47; IDEM, *The Me-*

At the same time, the European stock of precious metals, especially silver, was being reduced by the second problem: problems in European mining, whose technology, in later-medieval Europe, was probably inferior to that practised under the Romans. Over the centuries, the chief mines, to be found in Germany and south Central Europe, exploited the most readily accessible ore seams. Inevitably, as those seams became depleted, most mining enterprises experienced diminishing returns, rising marginal costs – and especially rising flood waters, since most mines were located in mountainous regions with underground streams. To be sure, some new silver mines in Sardinia, Bosnia, and Serbia had provided new sources of silver to counteract, in part, falling outputs from the older mines. Those new mines offered, however, only a temporary palliative, as they, too experienced diminishing returns – and worse. Indeed by 1439-41, most of the silver mines of Bosnia and Serbia had fallen into the hands of the conquering Ottoman Turks, and the rest by 1459.[5]

As I have also argued, the various innovations – chiefly by Italians – in medieval credit and banking failed to counteract these periodic scarcities of coined money in the late-medieval European economy. In the first place, all of the major advances in medieval financial institutions, beginning with deposit-and-transfer banking, and the bills-of-exchange banking had already taken place before such monetary scarcity became truly acute in the European economy, i.e., towards the end of the fourteenth century.[6] Second, credit

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dieval Origins of the Financial Revolution: Usury, Rentes, and Negotiablity, in "The International History Review", 25, 2003, 3, pp. 505-562.

[5] J.U. NEF, Silver Production in Central Europe, 1450-1618, in "Journal of Political Economy", 49, 1941, pp. 575-591; J.U. NEF, Mining and Metallurgy in Medieval Civilization, in Cambridge Economic History of Europe, II, Trade and Industry in the Middle Ages, ed. M.M. POSTAN, Cambridge 1952, pp. 456-469; reissued in The Cambridge Economic History of Europe, II, Trade and Industry in the Middle Ages, M.M. POSTAN, E. MILLER eds., revised edn., Cambridge 1987, pp. 696-734; D. KOVACEVIC, Les mines d'or et d'argent en Serbie et en Bosnie médiévales, in « Annales ESC », 15, 1960, pp. 248-258; E. WESTERMANN, Zur Silber- und Kupferproduktion Mitteleuropas vom 15. bis zum frühen 17. Jahrhundert: über Bedeutung und Rangfolge der Reviere von Schwaz, Mansfeld und Neusohl, in "Der Anschnitt: Zeitschrift für Kunst und Kultur im Bergbau", 38, 1986, pp. 187-211. For the Serbian and Ottoman Turks' exploitation of these mines, see S. PAMUK, A Monetary History of the Ottoman Empire, Cambridge-New York 2000 (Cambridge University Press, Cambridge Studies in Islamic Civilization), pp. 36-38, 44-45; B. BOJOVIC, Entre Venise et l'Empire ottoman: les métaux précieux des Balkans (XVe - XVIe siècle), in "Annales: Histoire, Sciences sociales", 60, 2005, 6, pp. 1277-1297. With the Ottoman conquest, 'le déclin des mines était irréversible' (p. 1291), and exports outside the Ottoman domains were forbidden

[6] See R. DE ROOVER, L'evolution de la lettre de change, XIVe-XVIIIe siècles, Paris 1953 (S.E.V.P.E.N.); IDEM, New Interpretations of the History of Banking, in "Journal of World History", 2, 1954, pp. 38-76; IDEM, The Rise and Decline of the Medici Bank, 1397-1494, Cambridge Mass. 1963; IDEM, Early Banking Before 1500 and the Development of Capitalism, in "Review of the His-

remained tied to and a function of the availability of coined money. Peter Spufford has clearly made this point in his eloquent comments on the adverse economic consequences of hoarding:[7]

> *Fear of disorder made men conceal their coin. Fear of not being able to replace coin made men the keener to keep their assets liquid. With scarcity of coin went a re-luctance to spend or invest what one had in hand, so that there was a sluggish circula-tion, which in itself was equivalent to a further reduction in the available quantity of coin. . ... Finally fear of the failure to repay cut back on credit. This too was partially a consequence of the shortage of money and was also a cause of yet further shortage.*

Fully supporting Spufford in his views that the problems from a growing scarcity of circulating specie were actually exacerbated by a credit contraction that worsened existing deflationary conditions are recent publications of Pamela Nightingale, Reinhold Muller, and Frank Spooner. [8]

The most effective proof for the contention that credit and financial in-stitutions did not counteract monetary contraction in the late-medieval Euro-pean economy, and indeed that such periodic contractions did take place, is the statistical evidence on prolonged deflation. Many economists, especially those steeped in the traditions of Classical Economics, would contend, how-ever, that neither monetary scarcity nor deflation should have posed any problems, since presumably all prices and factor costs would have moved di-rectly together in tandem. But the statistical evidence that I have produced for late-medieval England and the Low Countries refutes any such notions and demonstrates that because of long-term 'stickiness' of nominal money wages, interest rates, and rents (i.e., for the latter two, those stipulated in long term contracts), deflation increased the real burden of all these factor costs.[9]

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tory of Banking", 4, 1971, pp. 1-16; H. VAN DER WEE, *European Banking in the Middle Ages and Early Modern Period (476-1789)*, in *A History of European Banking*, Antwerp 2000², IDEM, G. KURGAN-VAN HENTENRIJK eds., pp. 152-180; J. MUNRO, *Medieval Origins of the Financial Revolu-tion*, cit., pp. 505-562.

[7] P. SPUFFORD, *Money and Its Use*, cit., pp. 345-347.

[8] P. NIGHTINGALE, *Monetary Contraction and Mercantile Credit in Later Medieval England*, in "Economic History Review", 2nd ser., 43, 1990, pp. 560-575; R. MUELLER, *'Chome l'ucciello di passegio': la demande saisonnière des espèces et le marché des changes à Venise au moyen âge'*, in *Études d'his-toire monétaire, XIIe-XIXe siècles,* ed. J. DAY, Lille 1984 (Université de Paris VII), pp. 195-220; F. SPOONER, *The International Economy and Monetary Movements in France, 1493-1725*, Paris 1956; Harvard 1972, for the English edn, also cited by P. SPUFFORD, *Money and Its Use*, cit., p. 347.

[9] See J. MUNRO, *Bullionism and the Bill of Exchange in England*, cit., pp. 169-239; IDEM, *Bullion Flows and Monetary Contraction in Late-Medieval England and the Low Countries*, in *Precious Metals in the Later Medieval and Early Modern Worlds,* ed. J.F. RICHARDS, Durham North Carolina 1983

Thus medieval and early modern concerns about the effects of monetary scarcity had some real justification.

At the same time, hoarding was also a rational response to the deflationary consequences of monetary contraction – for indeed, to repeat an earlier observation, all three periods of such monetary scarcity listed above were eras of stark deflation (with intervening periods of inflation, generally the fruits of war-induced coinage debasements). Obviously the fall in the general price level – the true meaning of the term deflation – increased the purchasing power of silver, by ounce or gram, in that most of the standard medieval moneys-of-account, in which prices were expressed (and by which we measure deflation), were tied to the currently circulating silver penny (*denier*, *denaro*, *Pfennig*, *groot*).

The problem of declining mining outputs: Deflation as the spur to technological changes

Such deflation also helped to provide the solution for problems of late-medieval monetary contraction. The mid-century, from the 1440s to the 1460s, marked the nadir of the late-medieval European deflations. Insofar as that specific deflation did increase the purchasing power of silver, it thereby provided the profit motive for inducing the necessary technological changes that created the subsequent South German or Central European silver-copper mining boom.[10] That revolutionary boom in silver mining outputs was the product of two interrelated sets of technological changes. The first was in mechanical engineering: the invention of horse-powered and water-powered piston-operated drainage pumps, to pump water from much deeper ore shafts

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(Carolina Academic Press), pp. 97-158; reprinted in IDEM, *Bullion Flows and Monetary Policies in England and the Low Countries, 1350 - 1500*, Aldershot 1992 (Ashgate, Variorum Collected Studies series CS 355); IDEM, *The Central European Mining Boom, Mint Outputs, and Prices in the Low Countries and England, 1450 - 1550*, in *Money, Coins, and Commerce: Essays in the Monetary History of Asia and Europe (From Antiquity to Modern Times)*, ed. E.H.G. VAN CAUWENBERGHE, Leuven 1991 (Leuven University Press, Studies in Social and Economic History), pp. 119-183; IDEM, *Patterns of Trade, Money, and Credit*, in *Handbook of European History in the Later Middle Ages, Renaissance and Reformation, 1400 - 1600*, I, *Structures and Assertions* , J. TRACY, TH. BRADY JR., H. OBERMAN eds., Leiden 1004 (E.J. Brill), pp. 147-195; IDEM, *Wage Stickiness, Monetary Changes, and Real Incomes in Late-Medieval England and the Low Countries, 1300 - 1500: Did Money Matter?*, in "Research in Economic History", 21, 2003, pp. 185-297; IDEM, *The Medieval Origins of the Financial Revolution*, cit., pp. 505-562.

[10] See J.H. MUNRO, *The Monetary Origins of the 'Price Revolution': South German Silver Mining, Merchant-Banking, and Venetian Commerce, 1470-1540*, in *Global Connections and Monetary History, 1470-1800,* D. FLYNN, A. GIRÁLDEZ, R. VON GLAHN eds., Aldershot-Brookfield 2003 (Ashgate Publishing), pp. 1-34; and IDEM, *The Central European Mining Boom,* cit., pp. 119-183.

up to the surface by stages.[11] Water seepage was always a very serious problem that had limited the extent of mine shafts in mountainous regions; and a complementary solution was the construction of downward-sloping adits, dug into mountain sides, to drain or divert the voluminous underground waters.

The second technological revolution was in chemical engineering: the invention of the *Saigerhütten* process of smelting silver-based ores. The basic problem that the Central European ore bodies had presented was the mixture of silver with copper whose separation could not be effected at reasonable cost by any known means. The solution was provided by mixing lead with the argentiferous-cupric ores in the smelting process (also made economically possible by water-powered piston pumps, to fan the furnace flames of the charcoal fuels): the lead combined with the silver, thus separating out the copper; and then the lead, with a very low melting point, was readily separated from the silver by re-smelting.

The South-German Central European silver-copper mining boom, c.1460-c.1540

The result of this mining boom was a vast increase – possibly a quintupling – of Europe's supply of mined silver. According to some estimates that I have produced, which inevitably must under-report the actual quantities of metals mined, in view of the absence of adequate data for many of the new mines, silver outputs from mines in Saxony, Thuringia, the Tyrol, Bohemia, Slovakia, and Hungary rose 329.4 percent: from a quinquennial mean of 12,973.44 kg in 1471-75 to one of 55,703.84 kg in 1536-40, the period of maximum outputs. Thereafter outputs fell to a mean of 39,882.76 kg in 1546-50, by which time cheaper silver was arriving in Seville from the Spanish Americas. The noted American economic historian John Nef, the first to attempt a documentation of this silver-mining boom, has provided much higher minimum and maximum estimates for a slightly earlier period: in 1526-1535: between 84,200 kg and 91,200 kg a year.[12]

In my view, this South-German Central European silver mining boom provides the initial monetary cause of the Price Revolution, which ensued from the 1520s – long before any substantial quantity of silver had arrived from the Americas. Indeed, the quantity of that European mined silver pro-

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[11] The pumps created a vacuum; and air-pressure, acting against this vacuum, thus lifted up the water, from one level of troughs to another. See PH. BRAUNSTEIN, *Innovations in Mining and Metal Production in the Late Middle Ages*, in "Journal of European Economic History", 12, 1983, pp. 573-591; and sources in n. 5.

[12] J.U. NEF, *Silver Production*, cit., pp. 575-591. In his view, even the lower-bound estimate represents a quintupling of silver mining outputs from the mid-15th century.

duced during the peak output of the late 1530s would not be exceeded by
Spanish American imports until the early 1560s.[13]

*The Venetian trade with the Levant: Cotton and the fustians industry in Italy and South
Germany in the later fourteenth century*

This South-German dominated silver-copper mining boom also provides
a central theme in this study because of its close connection to later-medieval
Venetian trade with the Mamlūk Levant, in particular the trade in Syrian cot-
ton, so much of which was sold to textile producers in South Germany. De-
spite a few important, if now older, studies on this subject, most medieval
economic historians have not given cotton the attention that it deserves, par-
ticularly as a component in the manufacture of relatively cheap, light-weight,
and very popular Italian textiles known as fustians: with a linen (flax) warp
yarn and a cotton weft yarn. They were a much softer and finer textile than
were the purely flax-based linens in the same if somewhat lower price range.[14]
The name *fustian* is thought to be derived from the Cairo industrial suburb of
al-Fustāt (Fostat), where reputedly this textile industry had its tenth-century
origins, in using a combination of domestic flax for the linen warp yarns, and
imported Syrian and/or South Asian cotton for the weft yarns.

Fustian-manufacturing quickly spread elsewhere in the Mediterranean ba-
sin, but most especially in Lombard Italy. In a study of Genoese trade with
Sicily, Syria, Egypt, and Constantinople, during the second half of the twelfth
century, Hilmar Krueger concluded that northern textiles, especially the
lighter weight and relatively cheap says and serges, had predominated in this

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[13] J.H. MUNRO, *The Monetary Origins*, cit., pp. 1-34. Those imports jumped from an annual
mean of 27,145.03 kg in 1556-60 to one of 83,373.92 kg in 1561-65, thanks to the recent ap-
plication of the Mercury Amalgamation process in the Spanish mines in 'Peru' (modern day
Bolivia) and Mexico.

[14] See M. MAZZAOUI, *The Cotton Industry of Northern Italy in the Late Middle Ages, 1150-1450*,
in "Journal of Economic History", 32, 1972, pp. 262-286; EADEM, *The Italian Cotton Industry in
the Later Middle Ages, 1100 – 1600*, Madison 1981, pp. 1-129; K. KELLENBENZ, *The Fustian Indus-
try of the Ulm Region in the Fifteenth and Early Sixteenth Centuries*, in *Cloth and Clothing in Medieval
Europe: Essays in Memory of Professor E. M. Carus-Wilson*, N.B. HARTE, K.G. PONTING eds., Lon-
don 1983 (Pasold Studies in Textile History, 2), pp. 259-278; W. VON STROMER, *Die Gründung der
Baumwollindustrie im Mitteleuropa: Wirtschaftspolitik im Spätmittelalter,* Stuttgart 1978; IDEM,
Wirtschaftspolitik im Spätmittelalter: Die Gründung der Baumwoll-Industrie in Oberungarn in Jahr 1411,
in *Studi in memoria di Federigo Melis*, L de ROSA, ed., I-V, Naples 1978 (Giannini), III, pp. 245-270.

trade, over all Italian and other Mediterranean textiles, of which 'only the Lombard fustians formed an impressive item of export'.[15]

Their subsequent importance has been most fully revealed in Maureen Mazzaoui's important monograph on *The Italian Cotton Industry*, in which she contended that by the mid-thirteenth century the Lombard fustian textile crafts had become a 'mass-production' industry, which then reached its peak in the early fourteenth century, when markets in the Mediterranean basin, having failed to maintain their former demographic growth, had ceased to grow at their former pace, so that they became saturated with a very large volume of very similar, indeed undifferentiated, lighter, cheaper, and coarser textiles.[16] As I have also argued, the subsequent decline in population eliminated the marketing scale-economies necessary to sustain such 'mass production' industries, while the steep rise in transportation and transaction costs that ensued from the widening stain of warfare in the Mediterranean basin eliminated profits for most 'price-taking' entrepreneurs and merchants in exporting such cheaper textiles – most of which were undistinguishable from rival substitute products. Thereafter, the scope of their intentional commerce was gradually restricted to the far higher valued luxury woollens and silks, whose manufacturers were entrepreneurial 'price-makers' engaged in monopolistic competition, with highly differentiated products. [17]

Lombard cotton-fustian manufacturing, however, continued to retain a reasonably viable profitable existence, if on a smaller scale, based on both the domestic Italian and nearby South German markets, for about another half-century, until warfare once again delivered the Italian industry a near fatal blow, to the direct benefit of South Germany. The first set of wars were those that Louis I 'the Great', king of Hungary launched against Venice in 1356, seizing Dalmatia in 1358; and, with various if changing alliances, he threatened Venice's very existence, until Venice defeated the Hungarians at Foss Nouva in 1373.[18] During these latter wars (in the 1360s), Louis had

[15] H. KRUEGER, *The Genoese Exportation of Northern Cloths to Mediterranean Ports, Twelfth Century*, in "Belgische tijdschrift voor filologie en gescheidenis/Revue belge de philologie et d'histoire", 65, 1987, pp. 722-750.

[16] M. MAZZAOUI, *The Italian Cotton Industry*, cit., pp. 87-104.

[17] See J.H. 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*, in "The International Journal of Maritime History", 11, 1999, 2, pp. 1-30; IDEM, *The "New Institutional Economics" and the Changing Fortunes of Fairs in Medieval and Early Modern Europe: the Textile Trades, Warfare, and Transaction Costs*, in "Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte", 88, 2001, 1, pp. 1-47.

[18] For Venice's subsequent dire threat to its existence, in the war with Genoa 1378-81, see below p. 918.

gained support from his former father-in-law Emperor Charles IV (King of Bohemia, r.1355-78) and from the South German Swabian towns, who had been loyal and important customers of Lombard fustians, which they had been purchasing chiefly at Venice.

The second set of wars were those that Charles IV, in alliance with Pope Urban V (r. 1362-70) launched against Bernabo Visconti, Signore or ruler of Milan – the chief town of Lombardy -- in 1367-69.[19] As a consequence of these various wars, the trade in Lombard fustians with South Germany became periodically disrupted, and very costly to transact. Evidently the major Austrian and South German (Swabian) towns therefore chose to establish their own fustian crafts as import-substitution industries, in fact replacing their already existing coarse linen industries: in Vienna, in 1369; in Augsburg, in 1372; in Nördlingen, in 1375; in Landshut and Ulm, in 1375. The necessary flax was obtained locally, while the requisite cotton was purchased from Venice.[20]

Venice itself had begun importing significant amounts of raw cotton from Mamlūk Syria and Palestine, and also Cyprus, just shortly before these events, chiefly for sale to the Lombard fustian industries; and Syria-Palestine had certainly been the principal source of cotton as well for the Italian cotton-fustians industries. As noted earlier, this region had also been supplying the Cairo region with cotton from the tenth century, as well as furnishing the raw material for its own textile industries. Italian trade (Pisa and Venice, principally) has been well documented for this region during the twelfth and thirteenth centuries, and even after the Fall of Acre in 1291 (with the ensuring papal prohibitions on trade with the Mamlūks, lasting until 1344).[21]

Certainly the establishment and evidently rapid growth of the South German fustian industries from the 1360s provided Venice with a very strong incentive to enlarge its imports of Syrian, Palestinian, and Cypriot cotton. Ashtor, in a noted article on this very trade, contends that 'the great upsurge of cotton planting and the export of raw and spun cotton began in the sec-

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[19] W.T. WAUGH, *Germany: Charles IV*, in *The Cambridge Med,ieval History*, VII, *Decline of Empire and Papacy*, J.R. TANNER, C.W. PREVITÉ-ORTON, Z. N. BROOKE eds., Cambridge-New York 1958 (Cambridge University Press), pp. 137-154, 148-151.

[20] See W. VON STROMER, *Die Gründung der Baumwollindustrie*, cit.*;* K. KELLENBENZ, *The Fustian Industry*, cit., pp. 259-261; M. MAZZAOUI, *The Italian Cotton Industry*, cit., pp. 129-153; E. ASHTOR, *Levant Trade in the Later Middle Ages,* Princeton-Oxford 1983 (Princeton University Press), pp. 92-93.

[21] See above p. 914; and E. ASHTOR, *The Venetian Cotton Trade in Syria in the Later Middle Ages*, in "Studi Medievali", XVII, 1976, pp. 675-715, reprinted in IDEM, *Studies on Levantine Trade in the Middle Ages*, London 1978 (Variorum Reprints CS74), no. VII [same pagination]; IDEM, *Levant Trade*, cit., pp. 3-63.

ond half of the fourteenth century', specifying that the major districts came to be Aleppo, Latakia, Sarmin in northern Syria, Hamath (or Hamā) in central Syria, and Acre in Palestine, where cotton cultivation may have displaced, to some extent, grain cultivation, when the Levantine population declined after the Black Death and when cotton offered better financial returns in agriculture. Ashtor also contends that Syrian cotton was of a much higher quality than that obtained from Anatolia (modern Turkey), Cyprus, Sicily, or Malta. Within Syria, Baalbek was the major centre for manufacturing woven cotton textiles, which the Venetians also exported, in significant quantities, to various European markets.[22]

The Venetian cotton trade from the Levant and Cyprus was almost disrupted at the very outset of the burgeoning German demand by a very bitter, destructive, and ongoing war between the kingdom of Cyprus (Peter I) and the Mamlūk Sultan, which had reached a fever pitch with the Cypriot sack of Alexandria in 1365, followed by other Cypriot corsair attacks on Levantine coastal towns in 1367 and 1368. The Sultan's retaliatory measures included arrests of all available European merchants, and confiscation of their goods and property (in both Egypt and Syria), including those of the Venetians and Genoese, whose support of the Cypriots and Catalan allies was, at best, lukewarm. In June 1369, Genoa and Venice, with full support from Pope Urban V, terminated (ostensibly) all trade with the Mamlūk Sultanate. Yet in December 1370 a joint Venetian-Genoese embassy secured a peace treaty with the Mamlūks, one that also included Cyprus and Catalonia. According to Ashtor, some thirty years of peace and commercial prosperity ensued in the Levant trade – though really only after Venice had avoided almost certain destruction and defeated its arch enemy Genoa, at the Battle of Chioggia, in 1381.

Venetian trade with the Mamlūk Levant in the fifteenth-century

During the ensuing decades, the Venetians gradually if surely gained ascendancy in the Levant trade, but especially so in the cotton trade. Ashtor estimates that in the 1380s the Venetians were exporting about 3,500-5,000 sacks of Syrian cotton a year, and about 8,000 sacks in the 1390s (and almost

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[22] IDEM, *The Venetian Cotton Trade in Syria*, cit., pp. 677-685; but Ashtor contends, without proof, that 'the greater part of [the raw cotton] was exported to Europe', and that 'the growth of the European fustian industry [Italian and German, evidently] gave a strong impetus to this branch of the Levant trade'. See IDEM, *Levant Trade*, cit., Table XII, p. 175, for the price of raw cotton in Venice, 1364-1402, with specific prices for cotton from Hamath, Acre, and Sarmin. On this cotton trade, see also M. MAZZAOUI, *The Italian Cotton Industry*, pp. 28-55.

12,000 sacks in 1400).[23] In that very year, this trade was again threatened with disaster, by the invasions of the Mongol conqueror Timūr (better known as Tamerlane), whose armies conquered Baghdad and Aleppo in 1400 and Damascus in 1401, producing a sharp increase in prices for Syrian cotton. But then his armies retreated from the Mamlūk domains to attack the Ottoman Turks, capturing their Sultan Beyazid I (at Angora, 1402); and three years later, in 1405, while planning an invasion of China, Timūr died – so that the Mongol threat quickly evaporated.[24]

Whether or not Mamlūk economic fortunes nevertheless declined sharply thereafter, as Ashtor maintains, is a still a matter of considerable dispute. He argues that a severe economic crisis was precipitated by 'a crop failure and high prices in Egypt in 1403-04 and [was] aggravated by the long civil war under the reign of the Sultan Faradj'.[25] But his dismal depiction of Mamlūk economic and especially industrial decline seems difficult to reconcile with his two other contentions. The first concerns the even greater growth in Venetian prosperity, after the death of Timūr, based essentially on the Levantine trade, even if that prosperity was partly based on Venice's skilful diplomacy and commercial skills in reducing the extent of Genoese and Catalan competition; and the second concerns Ashtor's data on Venetian balance of payments with the Levant at the end of the fifteenth century, a crucial matter to be considered later in this study.

Undoubtedly, however, Ashtor is correct in emphasising the growing role of Syrian cotton in Venetian commerce, contending that 'the cotton plantations in Egypt and Syria were again increased at the end of the fourteenth and the beginning of the fifteenth century'. Certainly, as well, Venetian exports of Syrian-Palestinian and Cypriot cotton was a very important factor in the continued growth of the South German fustian industries. The South Germans, it should be noted, came to Venice themselves in order to fetch that cotton, which was then transported across the Alps, chiefly by the Brenner Pass route.

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[23] E. ASHTOR, *Levant Trade,* cit., pp. 184-189. For the 1390s, Ashtor (p. 199) estimates that the total value of Venetian trade with the Levant was 400,000 to 500,000 gold dinars; 200,000 to 300,000 dinars for the Genoese; and 200,000 to 250,000 dinars for the Catalans; but these amounts are influenced by unusually high prices for Asian spices in the 1390s. See also, IDEM, *The Venetian Cotton Trade in Syria*, cit., pp. 708-713.

[24] IDEM, *Levant Trade*, cit., pp. 88-102.

[25] IDEM, *Levant Trade*, cit., p. 204. He cites a Mamlūk census indicating that the number of textile looms in Alexandria had fallen from about 14,000 in the 1390s to just 800 in 1434; even if this report is valid, some of that decline was due to demographic and not purely commercial-industrial factors.

The South German fustians industry, precious metals, English woollens, and the rise of the Antwerp Market in the mid-fifteenth century

Certainly, by at least the 1440s, the South German fustian manufacturers had expanded to become the single most important supplier of these relatively inexpensive, light, but still good quality textiles for European markets. They represent, in fact, the first important example of a cheaper-line textile industry that achieved a major growth in output in the later-medieval European economy, whose textiles markets had become so dominated now by luxury woollen and silk fabrics. By the early sixteenth century, the Swabian city of Ulm was producing over 100,000 pieces annually, an output that was, however, according to Mazzaoui, 'far surpassed by the city of Augsburg' (for which no data are supplied).[26] The importance of these South German fustians on the Antwerp market in the mid sixteenth century – when about 100,000 pieces were sold there a year – is demonstrated in Guicciardini's famous survey of that port's commerce.[27]

In order to understand more fully the rise of the Antwerp market, the revival of the European economy from the mid-fifteenth century depression, and then the expansion of the entire West European economy into the sixteenth century, we must now examine in greater depth the following related economic factors: the role of South German commerce, especially its role in the Central European silver-copper mining boom; the expansion of international trade in textiles; and the consequent growth in Venetian-Levantine trade, all from the 1460s.

As Herman Van der Wee has demonstrated in his magisterial *Rise of the Antwerp Market and the European Economy,* and then in several other publications, both the European economic recovery and Antwerp's rise to become Europe's leading financial-commercial centre were fundamentally based on the revival and re-establishment of overland, continental trade routes, which

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[26] M. MAZZAOUI, *The Italian Cotton Industry*, cit., pp. 140-141; see also K. KELLENBENZ, *The Fustian Industry*, cit., pp. 259-62 (also without data).

[27] W. BRULEZ, *Le commerce international des Pays-Bas au XVI siècle: essai d'appréciation quantitative*, in "Revue belge de philologie et d'histoire", 46, 1968, pp. 1205-1221; republished as IDEM, *The Balance of Trade of the Netherlands in the Middle of the 16th Century*, in "Acta historiae neerlandica: Historical studies in the Netherlands", 4, 1970, pp. 20-48: from L. GUICCIARDINI, *Descrittioni di tutti i Paesi Bassi*, Antwerp 1567, pp. 124-126. Given the very wide variety of commodities sold there, and their relative cheapness, we should not dismiss the importance of the fustians merely on grounds of absolute value: about 240,000 Carolus florins or £40,000 *groot* Flemish = about 1.3% of the total value of transactions in 1560: 18,500,000 florins = £3,083,333 *groot*.

now ran through Germany.[28] European economic expansion in the earlier Commercial Revolution era, from the twelfth to late thirteenth centuries, had been fundamentally dependent on other overland routes, especially the French routes running from Flanders through the Champagne Fairs and down the Rhone valley route to Marseilles and then Genoa. When the afore-mentioned European and Mediterranean warfare, from the 1290s, and the consequent sharp rise in transport and transaction costs, virtually eliminated these routes as major conduits of international trade, diverting that trade to the far longer maritime routes, via the Mediterranean and Atlantic routes, not only did the Champagne and other international fairs disappear, but, for reasons more fully explored in the Van der Wee-Peeters model, the aggregate volume and value of international trade also suffered a disproportionate contraction (i.e., declined, in their view, more than did the aggregate population).[29]

The new overland, continental routes were developed, from the 1440s, in a far different trajectory, to the east, one that was now free from the ravages of warfare and insecurity: running from Venice, across the Brenner Pass into South Germany, and from there, via the Frankfurt Fairs, down the Rhine to the Low Countries. They terminated at the combined Brabant Fairs of Ant-werp and Bergen-op-Zoom, which had earlier begun their existence as purely regional foodstuffs fairs. That direct overland route, it must be noted, in-volved a distance that was less than 20 percent of that required by sea (via the Adriatic, Mediterranean, Straits of Gibraltar, and the Atlantic). It was also a considerably safer, more secure route, involving a greater certainty of time spent in transit, a requisite condition for the functioning of regional and in-ternational fairs.[30]

As Van der Wee has argued so cogently, these new overland continental trading routes, along with the revival of the continental fairs – at Geneva, Be-sançon, Lyons, as well as at Frankfurt and Antwerp -- fed into an interlacing network of regional trade routes. Thus they promoted a rapid economic ex-pansion by a macro-economic multiplier-accelerator mechanism; and such

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[28] H. VAN DER WEE, *Growth of the Antwerp Market and the European Economy, 14th to 16th Centuries*, I-III, The Hague 1963, II, *Interpretation*, pp. 113-161. See the next note.

[29] IDEM, TH. PEETERS, *Un modèle dynamique de croissance interseculaire du commerce mondiale, XIIe-XVIIIe siècles*, in "Annales ESC", 15, 1970, pp. 100-128. See also a further elaboration of these views in H. VAN DER WEE, *Structural Changes in European Long-Distance Trade, and Particularly in the Re-export Trade from South to North, 1350-1750*, in *The Rise of Merchant Empires: Long-Distance Trade in the Early Modern World, 1350-1750*, ed. J. TRACY, Cambridge 1990, pp. 14-33. See also J.H. MUNRO, *Patterns of Trade*, cit., .pp. 147-195; J.H. MUNRO, *The Low Countries' Export Trade*, cit., pp. 1-30; J.H. MUNRO, *The "New Institutional Economics"*, cit., pp. 1-47.

[30] See the sources cited in nn. 28-29.

trade involved hundreds of more towns than had been served by maritime routes (whose role and significance then waned in Europe itself, from the later fifteenth century). For Van der Wee, such trade served as the chief engine of economic growth in early-modern Europe – and not demographic factors, for population growth was (in his view and mine) more the consequence than the cause of this aggregate economic expansion.

Chiefly instrumental in the development of these new overland routes, and in the development of the new fairs of Frankfurt and Brabant were the Germans – both the Cologne-based Rhenish Hanse and then the South Germans, whose leading merchant banking families, the Fuggers especially, had secured a dominant role in both the manufacture and trade of the Swabian fustians, which they marketed in both sets of these growing international fairs. The subsequent rise of the Antwerp fairs in particular to achieve commercial and financial dominance in the European economy, from the 1460s to the 1560s, was based on a tripod that consisted of, first, English woollens, then the South German metals (silver and copper) and fustians, and finally, from 1501, Portuguese spices – from their conquests in the Indian Ocean.[31]

The English had established the first leg in 1421, when Antwerp became the overseas trading staple or entrepot for their woollen cloth exports, under the organization of the London-based Merchants Adventurers. Having been excluded from Flanders (Bruges) and the Baltic (Danzig) – and the latter had seemed so promising for their cloth exports from the 1380s – the English received a warm welcome in Antwerp (liberated from Flanders only in 1405), chiefly because it no longer had a local woollen cloth industry to protect. For reasons that I have explored elsewhere, the English draperies were now producing good quality woollens at a much lower price than were their rivals in Flanders, Brabant, and Holland, whose luxury-oriented draperies had become dependent on heavily-taxed English wools – then the world's finest wools. Indeed, the English cloth industry's chief advantage was in using these very

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[31] For the following see: J.A. VAN HOUTTE, *La genèse du grand marché international d'Anvers à la fin du moyen âge*, in "Revue belge de philologie et d'histoire", 19, 1940, pp. 87-126; H. VAN DER WEE, *Growth of the Antwerp Market*, cit., II, 73-124; J.A. VAN HOUTTE, *Bruges et Anvers: marchés `nationaux' ou `internationaux' du XIVᵉ au XVIᵉ siècle?*, in "Revue du Nord", 24, 1952, pp. 89-108; J J.A. VAN HOUTTE, *Anvers aux XVᵉ et XVIᵉ siècle*, in "Annales ESC", 16, 1961, pp. 248-278; J.H. MUNRO, *Bruges and the Abortive Staple in English Cloth: An Incident in the Shift of Commerce from Bruges to Antwerp in the Late Fifteenth Century*, in "Revue belge de philologie et d'histoire/Belgisch tijdschrift voor filologie en geschiedenis", 44, 1966, pp. 1137-1159; J.H. MUNRO, *Medieval Woollens: The Western European Woollen Industries and their Struggles for International Markets, c.1000-1500*, in *The Cambridge History of Western Textiles*, I-II, ed. D. JENKINS, Cambridge-New York 2003 (Cambridge University Press), I, chapter 5, pp. 228-324; J.H. MUNRO, *Patterns of Trade*, cit., .pp. 147-195; IDEM, *The Central European Mining Boom,* cit., pp. 119-183.

same fine wools, the chief determinant of textile quality, tax free. The Eng-
lish also sought to obviate the chief comparative advantage of their Nether-
lander rivals by having more and more of their woollens dyed and finished in
Antwerp (and in some neighbouring towns). Their chief customers, at the
Brabant Fairs, came to be the Rhenish merchants who so eagerly bought their
finished woollens, as their chief return cargo, to be marketed throughout
Germany and Central Europe. From the 1460s, when the Central European
mining boom really commenced, South German merchants began to displace
the Rhenish as the chief customers for English woollens at the Brabant Fairs,
for the same reasons: as their prime return cargo in exchange for the growing
quantities of fustians, silver, and copper that they were bringing to Antwerp,
whose mint re-opened, only in 1467.[32]

The consequences, largely unintended, of two related, competitive
changes in English and Burgundian mint policies, in the mid 1460s, helped to
promote both a greater flow of South German silver to Antwerp and a boom
in English cloth exports to the Antwerp fairs. First, in August 1464, the Eng-
lish king, Edward IV (r. 1461-83), debased the English silver coinage – which
had been untouched since 1412 -- by 20.0 percent. That had the immediate
effect of lowering exchange rates and thus of sharply reducing the market
prices of English woollens at the Antwerp fairs, at a time when countervail-
ing deflationary forces in England prevented any subsequent rise in English
domestic prices.[33] Second, Duke Philip the Good of Burgundy (r. 1419-67)
responded with a set of somewhat lesser debasements in 1466-67, reducing
the silver contents by 16.9 percent; but more important, his debasements al-

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[32] See the sources in the previous note, and also: J.H. MUNRO, *Anglo-Flemish Competition in the International Cloth Trade, 1340-1520*, in "Publication du centre européen d'études bourgui-gonnes", 35, 1995, pp. 37-60 [*Rencontres d'Oxford (septembre 1994): L'Angleterre et les pays bas bour-guignonnes: relations et comparaisons, XVᵉ-XVIᵉ siècle*, ed. J.-M. CAUCHIES]; J.H. MUNRO, *The Symbiosis of Towns and Textiles: Urban Institutions and the Changing Fortunes of Cloth Manufacturing in the Low Countries and England, 1270-1570*, in "The Journal of Early Modern History: Contacts, Comparisons, Contrasts", 3, 1991, 1, pp. 1-74; J.H. MUNRO, *The "New Institutional Economics"*, cit., pp. 1-47.
[33] The silver contents of the English sterling penny were reduced from 0.899 gram to 0.719 gram; and the value of fine silver rose from £4.634 per kg to £5.793 per kg. The Phelps Brown & Hopkins price index in fact fell from a mean of 101.497 in 1461-65 to one of 98.538 in 1476-80; and, despite some rise in the 1480s (with supply shocks), the mean was still only 98.538 in 196-1500 (Mean of 1451-75 = 100.0). Data calculated from CH. CHALLIS, *Appendix I: Mint Output, 1220-1985*, in *A New History of the Royal Mint*, ed. IDEM, Cambridge 1992, pp. 673-698; and E.H. PHELPS BROWN, S.V. HOPKINS, *Seven Centuries of the Prices of Consumables Compared with Builders' Wage-Rates*, in "Economica", 23, 1956, p. 92, reprinted in IDEM, *A Perspective of Wages and Prices*, London 1981, pp. 13-59, but with corrections from data in their working papers in the Archives of the British Library of Economic and Political Science: Phelps Brown Papers.

tered the bimetallic mint ratio from 11.98:1 to 10:83:1, thereby increasing the relative value of silver and thus the incentive to bring South German silver to mints in the Low Countries. There was no such incentive to take the silver to English mints, because Edward IV's 1465 debasement (of gold) had also altered the bimetallic ratio in the opposite direction: raising the bimetallic ratio from 10.33:1 to 11.16:1.[34] Thus increased flows of German silver to Antwerp meant an augmented German demand for English woollens.

The very significant results can be seen in the relevant statistics. English broadcloth exports rose from a mean of 29,001.6 pieces (24 yds by 1.75 yd) in 1461-65 to one of 62,583.4 pieces in 1496-1500 – a rise of 115.8 percent. The English cloth exports finally peaked in 1546-50 at 135,189.50 pieces; and over this period, London's share of total cloth exports, almost all of which went to Antwerp, rose from 55.3 percent to 91.6 percent.[35] One should also note that the first major Tudor enclosure movement, largely then designed to produce the wool for cloth manufacturing, almost exactly parallels this ninety-year sustained cloth export boom.

In Antwerp itself, its mint outputs rose from an annual mean of 1,475.96 kg fine silver in 1466-70 (when, to repeat, minting had first re-commenced there) to one of 5,262.975 kg in 1476-80 – though some of that was silver recycled in coinage debasement. The annual mean of the quantity minted in 1496-1500, when no significant debasements occurred, was 2,801.05 kg, about double that of Antwerp's initial mint outputs. The total amount of silver coined in the Burgundian-Habsburg Netherlands (Brabant, Flanders, Namur, Holland-Zealand) in 1496-1500, expressed as a quinquennial means, was 5,345.91 kg; and in England, the quinquennial mean output for this period was 2,490.94 kg – so that the combined total of fine silver coined in these two countries was 7,836.85 kg. For this same quinquennium, the total mean quantity of fine gold minted was 753.559 kg: 474.633 kg in the Burgundian-Habsburg Netherlands and 278.926 kg in England.[36]

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[34] For mint ratios, calculated in terms of the two pure (fine) metals, see J.H. MUNRO, *Bullion Flows*, cit., Table 10, pp. 148-52; J.H. MUNRO, *Wool, Cloth and Gold*, cit., pp. 155-179, and Appendix: Table C, pp. 198-199, Table G, p. 204, Tables J-K, pp. 209-210. Note that the bimetallic ratios in Table C are based on English and Flemish standards of fineness, not on values of the pure metals; and therefore they differ from the ones cited here. See also J.H. MUNRO, *Anglo-Flemish Competition*, cit., pp. 37-60; J.H. MUNRO, *The Monetary Origins*, cit., pp. 1-34; H. VAN DER WEE, *Growth of the Antwerp Market*, cit., II, pp. 119-142.

[35] See sources concerning the textile trades in n. 31; and also J.H. MUNRO, *Medieval Woollens*, cit., Tables 5.3 and 5.4, pp. 304-307; and also pp. 292-296.

[36] J.H. MUNRO, *The Monetary Origins*, cit., Table 1.4, pp. 12-13; Table 1.5, pp. 16-17 (but including only mint outputs of Flanders and Brabant).

South German silver and Venetian trade with the Levant in the late fifteenth-century: alternative perspectives on the 'balance of payments problem'

We may compare those statistics with some that Ashtor has supplied to estimate Venice's deficit on balance of payments with the Levant in roughly the same period, in the later 1490s, when, according to Ashtor, Venice's Levant trade had reached its apogee. In several publications, he has provided a variety of sometimes confusing estimates of trade balances. In one publication (1976), he contends that Venice then purchased Oriental goods with a total value of about 500,000 ducats in the Levant: about 400,000 ducats in spices and dyestuffs, and the other 100,000 ducats in 'cotton, silk, jewels, and potash'(and/or alkalis). He also concludes that the 'Venetians' Levantine trade had increased by 33% in 100 years': in part at the expense of Genoese and Catalan trade, but also in part in response to a growth in European demand for Oriental goods (including cotton).[37] In a more recent publication (1983), he contended that, in this decade, the Venetian galleys to Alexandria (Egypt) and Beirut (Syria) contained cargoes worth between 450,000 and 550,000 ducats, of which 300,000 to 360,000 ducats were in specie (or coin and bullion): i.e., from 60 to 65 percent of the total value of the cargoes.[38] He also stated that the total value of European manufactured goods and raw materials – especially in the form of various textiles, glass wares, soap, paper products, grains, timber, iron, and copper – together 'amounted perhaps to a third' of that total investment.[39]

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[37] E. ASHTOR, *The Volume of Levantine Trade in the Later Middle Ages (1370-1498)*, in "Journal of European Economic History", 4, 1975, 3, pp. 573-612, with quotation on p. 609; reprinted in E. ASHTOR, *Studies on Levantine Trade in the Middle Ages*, London 1978 (Variorum Reprints CS74). See also E. ASHTOR, *Levant Trade*, cit., p. 470, contending that the quantity of pepper purchased in the Levant rose from 1,500-2,000 *sportas* in the early fifteenth century to 2,500 in the 1490s; and that the quantity of ginger purchased rose from 2,000 *kintārs s* to 6,000 or 7,000 *kintārs* over the same period; and E. ASHTOR, *A Social and Economic History of the Near East in the Middle Ages,* London 1976 (Collins 1976), p. 328: contending that Venetian pepper exports from Alexandria rose from 283,050 kg in 1396 to 357,300 kg in 1498 (a rise of 26 percent); and that ginger exports rose from 36,000 kg in 1396 to 255,240 kg in 1498 (a rise of 609 percent).

[38] IDEM, *Levant Trade*, cit., pp. 476-78. Compare these figures with those given from the Morosini chronicles, in A. STAHL, *European Minting and the Balance of Payments with the Islamic World in the Later Middle Ages*, in *Relazione economiche tra Europa e mondo islamico. Secc. XIII - XVIII*, ed. S. CAVACIOCCHI, Firenze 2007 (Le Monnier, Istituto Internazionale di Storia Economica "F. Datini", Atti delle "Settimana di Studi" e altri convegni, 38). For one highly unusual year, 1433, following a commercial disruption, the Venetians exported 620,000 ducats in coin and bullion and 380,000 ducats worth of goods to the Levant, for a total value of about 1,000, 000 ducats: i.e., about the same ratio, here 62% in specie. But the average value of total exports of specie and goods to the Levant in the period 141-1431 was only a third of that: about 334,000 ducats.

[39] IDEM, *The Volume of Levantine Trade*, cit., p. 611.

But these estimates on the value of trade conducted by the costly Alexandria and Beirut state galleys do not, therefore, include the value of Syrian cotton and some other commodities that, because of low value:weight ratios, were necessarily shipped by the much more cheaply operated (and privately owned) cogs. Even though Ashtor believed that the aggregate value of the cotton traded had declined in the later fifteenth century, because of a steep fall in the price of Syrian cotton, he estimates that the value of these cog-borne cargoes in the later 1490s was about 130,000 to 180,000 ducats a year, and thus still a very significant proportion, perhaps as much as 25 percent, of the total Venetian trade with the Levant, whose aggregate value thus 'amounted to 580,000-730,000 ducats a year at the end of the fifteenth century'.[40]

That would mean an aggregate value of value of the Levantine trade (whether measured in imports or exports) amounted, in the weight of fine gold, from 2.056.10 kg to 2,587 kg; or, in terms of fine silver, if we use a bimetallic ratio of 11:1, from 22,621.10 kg to 28,46.35 kg.[41] If we further assume, as a mean estimate, that European specie accounted for 62.5 percent (five-eighths) of the value of Asian goods purchased in the Levant, that would produce estimates of Venetian exports of either of the following: for gold, ranging from 1,285.06 kg to a maximum of 1,617.41 kg; or for silver, ranging from 14,135.69 kg to a maximum of 17,191.47 kg. (or some mix of the two metals). The estimated amount of gold exported ranges from 1.705 to 2.146 times as much gold as minted in England and the Habsburg Low Countries combined (i.e., 753.559 kg); and similarly the estimated amount of silver exported – if all the bullion and specie were in silver – ranges from 1.804 to 2.270 times as much pure silver as was minted in England and the Habsburg Low Countries combined (i.e., 7,836.85 kg). These statistical data are best appreciated in the summaries presented in Tables 1 and 2.

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[40] IDEM, *Levant Trade*, cit., pp. 476-478 and Table LIV. He also cites an estimate from the Mamlūk Sultan Kānsūh al-Ghawri that 'at the end of the fifteenth century the Venetians invested 300,000 ducats in cash and 300,000 ducats in merchandise every year in the trade with Egypt alone. (p. 478). For other estimates, up to a total investment of 1.1 million ducats in the Levantine trade, see: IDEM, *The Venetian Supremacy in Levantine Trade: Monopoly or Pre-Colonialism?*, in "Journal of European Economic History", 3, 1974, 1, pp. 5-53; reprinted in IDEM, *Studies on Levantine Trade in the Middle Ages*, London 1978 (Variorum Reprints CS74); IDEM, *Profits from Trade with the Levant in the Fifteenth Century,* in "Bulletin of the School of Oriental and African Studies", 37, 1975, pp. 250-275, reprinted in IDEM, *Studies on Levantine Trade in the Middle Ages*, London 1978 (Variorum Reprints CS74); IDEM, *Les métaux précieux et la balance des payements du Proche-Orient à la basse-époque*, Paris 1971; IDEM, *A Social and Economic History*, cit.pp. 319-331.
[41] The Venetian gold ducat contained 3.545 g. of gold, at about 99.48 percent pure.

Consider, at the same time, that the minimum mean quinquennial output of the known and documented South German-Central European mines (in 1496-1500) was 25,759.2 kg fine silver – possibly an underestimate of one third (Table 3). So obviously not all of that South German silver was flowing down the Rhine to the Brabant Fairs; and a very considerable, if unknown, amount continued to go to Venice. Indeed, in supplying South Germany with the cotton for its fustian industries the Venetians had, in effect, always exchanged it for German silver. The vast increase in silver outputs from these mines, from the 1460s, thereby increased the German ability to acquire more cotton and, more generally, provided the Venetians with the means of greatly expanding their trade with the Levant and Cyprus, for cotton. According to Maureen Mazzaoui, by the late fifteenth and early sixteenth centuries, the Venetians were importing about twice as much cotton (about 4,000 tons or about 3,630,000 kg) as they had in the early to mid-fifteenth century.[42] That is a very, very different question from the traditional view that Venice was accommodating Europe's short-sighted and greedy demand for spices and other Asian luxuries by draining Europe of its life-blood in precious metals, if we may apply the standard Mercantilist metaphors – or, in the words of the *Libelle of Englysche Polycye* (written about 1435-36), 'as the wasp sucks honey from the bee'.[43]

Venice and the 'balance of payments' problem with the Levant in the later fifteenth century: the role of silver and the problem of bimetallic ratios

In dealing with this Mercantilist 'problem', however, we need to find answers to two related questions: why did Europe require so much 'treasure' in conducting its trade with the Levant, and more generally with Asia; and why was such a large proportion in the form of silver? The typical or standard answer to

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[42] M. MAZZAOUI, *Italian Cotton Industry*, cit., pp. 51-52. From the Sarrono firm's record: an estimate of 1,980 tons of raw cotton per year in the early fifteenth century; from various estimates: about 4,000 tons in the late fifteenth century (2,250 tons from Cyprus and Smyrna); and again, citing Frederic Lane, about 4,100 tons in 1560 (13% of total ship tonnage of 31,564 tons). See also F LANE, *Cotton Cargoes and Regulations against Overloading*, in *Venice and History*, Baltimore 1966 (Johns Hopkins University Press), pp. 253-262; and IDEM, *Venice: A Maritime History*, Baltimore 1973, pp. 480-481.

[43] *The Libelle of Englyshe Polycye: A Poem on the Use of Sea-Power,* ed. G WARNER, Oxford 1926, pp. 21-22, condemning Italian merchants who 'bere the golde oute of thys londe, and souke the thryfte awey oute of our honde [hand]; as the waffore [wasp] soukethe honye fro the bee, so mynuceth oure commodite [so diminishes our wealth]'. See also G. HOLMES, *The 'Libel' of English Policy*, in "The English Historical Review", 76, 1961, pp. 193-216.

the first is that many parts of Asia, from Japan to Persia, or indeed to Egypt in the west, had their own highly developed manufacturing industries; and thus Europe had little to offer the Asians, at competitive prices. As we shall see, if such arguments apply to the later trade of the Dutch and English East India Companies, they do not apply as much to European trade with the Levant.

Since, however, Asian spices played such a major role in both the Levant trade – possibly over 75 percent by value for Venice's trade – and the later East India Company trades (up to the 1670s), we need a more concrete measure of their astonishingly high values, especially in the fifteenth century, compared to their values today. The best way of making that comparison is to relate spice prices, then and now, with the purchasing power of skilled labour: master masons and carpenters, whose occupations have changed little over the ensuing centuries (except for twentieth-century mechanization). Thus in 1438-49, such building craftsmen could have purchased, with their full daily wage (12 hours), only 65.3 grams (0.065 kg) of cloves in Antwerp and 75.6 grams in London; and 241.1 grams of pepper in Antwerp and 284.6 grams in London. But in Toronto, in December 2005, a master carpenter could have purchased, with his daily wage (8 hours), 6,381.1 grams (6.381kg) of cloves and 12,234.1 grams (12.234 kg) of pepper.[44] Clearly a revolution in the spice trade has occurred in the intervening period, but chiefly with the nineteenth-century transportation revolutions (i.e., steam shipping).

The answer to the second major question, concerning the choice of precious metals to be exported, is also far more clearly established for eastern than for western Asian (Levantine) commerce. The very marked difference in bimetallic ratios certainly indicates that silver was generally always scarcer and thus relatively more valuable – in terms of both gold and commodities – in eastern Asia than it was in Europe. For example, in both China and Japan, the bimetallic ratio during the sixteenth and early seventeenth century was generally 8:1 or 9:1 – i.e., meaning that a kilogram of silver was worth as much as

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[44] Based on data given in H. VAN DER WEE, *Growth of the Antwerp Market*, cit., I, Appendix no. 26:1, pp. no. 309; 26:6, p. 326; 28:2, pp. 351, Synoptic Tables, p. 458; J.E. THOROLD ROGERS, *A History of Agriculture and Prices in England*, IV, *1401-1582,* Oxford 1882, pp. LONDON GUILDHALL MANUSCRIPTS LIBRARY: MS 5174, vol. 1; Brewers' Guild, Warden's Accounts (1424-1562); Corporation of London Record Office: Bridge Master's Account Rolls, 1381-1398; Bridge Master's Accounts: Weekly Payment Series, 1404-1510 (Vols. I-III); Toronto Carpenters' Wages: Carpenters Union, the District Council of Ontario (whose assistance is gratefully acknowledged).

1/8th or 0.125 kg of gold – compared to a bimetallic ratio of about 11.5:1 in western Europe during the early sixteenth century.[45]

If the Europeans had maintained a preference for shipping silver rather than gold to the Levant,[46] the thin and sometimes conflicting evidence available on late-medieval bimetallic ratios would seem to justify such a preference more in the fourteenth than in the fifteenth, at least according to that supplied by Jere Bacharach.[47] His tables for Mamlūk Egypt indicate that the bimetallic ratio was generally 9.3:1, from 1313 to 1403, and consistently so from 1341. Andrew Watson had earlier produced a somewhat similar table for Mamlūk Egypt, indicating a low bimetallic ratio of 8.3:1 from 1340-1360, a very high and isolated one of 12.4 for 1368-69, and thereafter, a lower ratio of 9.6:1, to ca. 1400.[48] Spufford, however (and citing neither), has produced a table that indicates far higher bimetallic ratios: of 11.3:1 in 1375, 14.7:1 in 1384, but falling to 12.7:1 in 1399. Those bimetallic mint ratios may be compared to those that he has presented for Venice: widely fluctuating ratios that ranged from a high of 14.2:1 in the period 1305-1330, to a low of 9.4:1 in 1350; but thereafter that ratio rose and hovered about 11:1 into the early fifteenth century.[49] In Flanders, the bimetallic ratio had also fallen to a similar low of 9.68:1, enduring from 1390 to 1418; and in England, the bimetallic ratio had fallen from 11.16:1, one maintained from 1346 to 1412, to one of 10.33:1,for the ensuing period of 1412 to 1464.[50]

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[45] K. YAMAMURA, T. KAMIKI, *Silver Mines and Sung Coins: A Monetary History of Medieval and Modern Japan in International Perspective*, in *Precious Metals in the Later Medieval and Early Modern Worlds*, ed. J. RICHARDS, Durham 1983 (Carolina Academic Press), pp. 329-362, Tables 9-10, pp. 345-346.

[46] See E. ASHTOR, *The Venetian Cotton Trade in Syria*, cit., p. 712 : 'Insofar as cash payments are concerned, it seems that most of them were made in silver coins, although often it was not coined silver, but silver plates'.

[47] Compare J. BACHARACH, *Monetary Movements in Medieval Egypt, 1171-1517*, in *Precious Metals in the Later Medieval and Early Modern Worlds*, ed. J.F. RICHARDS, Durham N.C. 1983, pp. 159-182, Table 3, pp. 179-181; citing as well E. ASHTOR, *Les métaux précieux et la balance des payements du Proche-Orient à la basse-époque*, Paris 1971.

[48] A. WATSON, *Back to Gold -- and Silver*, in "Economic History Review", 2nd ser., 20, 1967, pp. 1-34, Table 2, p. 27.

[49] P. SPUFFORD, *Money and Its Use*, cit., Table 7, p. 354; IDEM, *Handbook of Medieval Exchange*, London 1986 (Royal Historical Society), Table II: Venetian Gold:Silver Ratios, 1305-1509, p. lxiii. Spufford also cites Ashtor as a source, and another article by Bacharach, but not the one cited here, in n. 53. See also A. WATSON, *Back to Gold*, cit., Table I, pp. 23-25: Silver-Gold Ratios in Europe, 1100-1400; and S. PAMUK, *A Monetary History*, cit., pp. 22-26, 43-45 (on Egypt and the later 14th-century 'silver famines'.

[50] J.H. MUNRO, *Bullion Flows*, cit., Table 10, pp. 148-52. As noted earlier (see p. 923), that bimetallic ratio was restored to 11.16:1, with Edward IV's debasement of 1465.

In Mamlūk Egypt, however, during the early fifteenth century – specifically the years 1403 to 1410 -- the bimetallic ratio had briefly risen to an astonishing high of 14:1: this time, according to all three historians (Bacharach, Watson, Spufford). Certainly in this period (and indeed even later), the Venetians were exporting considerable quantities of gold ducats to the Levant.[51] Then the bimetallic ratio fell very sharply, to reach a temporary low of 7:1 in 1414, while fluctuating thereafter until the 1430s, when (according to Bacharach) it maintained a generally stable level of 10.1 to 10.3:1, over the next several decades.[52] In 1453, when the famous French merchant-financier Jacques Coeur was on trial for violating the ban on bullion exports, accused of having shipped 20,000 silver *marcs* (weighing 4,895 kg) to Syria, thereby having 'desnué [dénuder] nostre dit pais du Langudeoc', he admitted that it was very profitable to do so, because when silver was worth six gold *écus* in France it was worth seven *écus* in Syria.[53]

Support for that view may be found in the sudden rise of the bimetallic market ratio in the Burgundian Low Countries in the 1440s and 1450s: from 10.87:1 to 11.98:1.[54] Meanwhile, in Venice the bimetallic ratio had also risen:

[51] See in particular L.B. ROBBERT, *Monetary Flows – Venice, 1150 to 1400*, in *Precious Metals in the Later Medieval and Early Modern Worlds*, ed. J.F. RICHARDS, Durham North Carolina 1983 (Carolina Academic Press), pp. 53-78, p. 74, estimating that in the early 1420s, the Venetian mints issued 1,200,000 gold ducts and 800,000 ducats worth of silver coins, of which 'Venice annually exported 300,000 ducats' worth to Egypt, to Syria, and to her own Aegean possessions, and to England'; but that estimate in part relies on the questionable validity of Doge Tommaso Mocenigo's 'Deathbed Oration'. See A.M. STAHL, *Zecca: The Mint of Venice in the Middle Ages*, Baltimore-London 20000 (The American Numismatic Society-The Johns Hopkins University Press), pp. 369-406, esp. p. 406, contending that the supposed current mint production 'of 200,000 gold ducats, and the silver issues [including] 500,000 ducats' worth of [silver] grossi going to Syria and 100,000 ducats' worth of [silver] soldini and mezzanini going to the Terraferma, the Levant, and England respectively... are significantly higher than any we have seen throughout the Middle Ages and are certainly in contrast to contemporary characterizations in legislation of the gold and silver mints as being "in desolation and reduced to almost nothing." The monetary situation presented in the *arenga* represents at best the exaggeration of a statesman wishing to put the best light on his accomplishments; more probably it results from the efforts of men of a later age to depict his reign as a "golden age" of the mint of Venice'. (p. 406).

[52] J. BACHARACH, *Monetary Movements*, cit., Table 3, p. 180; P. SPUFFORD, *Money and Its Use*, cit., Table 7, p. 354: giving ratios of 8.1:1 in 1415, 10.7:1 in 1416-21, 7:1 in 1422-24, and 11:1 in 1425-38 (when his series ends); A. WATSON, *Back to Gold*, cit., Table 2, p. 27: giving only two ratios for Egypt and Syria: 14.1:1 in 1404-05, and 8.0:1 in 1422.

[53] *Ibid*., pp. 20-21: 'Il a prouffit a porter argent blanc en Suyrie, car quand il vault 6 escus par deca il en valut 7 par dela': citing archival documents (Département de la Loire), and M. MOLLAT, *Les affaires de Jacques Coeur: Journal deu Procureur Dawet,* Paris 1952.

[54] J.H. MUNRO, *Bullion Flows*, cit., Table 10, p. 151.

from 10:6:1 in 1429 to 11.4:1 in 1449-52, and to a peak of 12:1 in 1445-60.[55] Very shortly thereafter, the European bimetallic ratios began to fall (despite the ensuing Central European Silver Mining boom). As noted earlier, the Burgundian ratio was reduced to 10.83:1 in 1466-67, reaching a low of 10.25:1 in 1495; in 1500, it was increased sharply to 11:14:1, while the English bimetallic ratio was restored, in 1465, to the former level of at 11.16:1 (remaining at that ratio until 1542).[56] In Venice, the ratio fell slightly to 11.91:1 in 1463 (after which the only recorded ratio is 10:7:1 for 1509).[57] In Mamlūk Egypt, on the other hand, the bimetallic ratio rose from 10.3 to 11.1:1 in 1483, and then sharply to 12.5:1 in 1498 – indicating that silver had now become relatively cheaper in the Levant than in western Europe (if only temporarily; for the bimetallic ratio recorded for 1507 is a very low 8.5:1).[58] What metals then predominated in this Levantine trade are obviously difficult to determine, but presumably the proportions of the two metals differed considerably from those of the later seventeenth-century East India Company trades in the Indian Ocean, whose evidence will be examined briefly at the end of this study.

Another important difference between the Levantine and Indian Ocean trades was that the even vaster land mass that came to be incorporated into the expanding Ottoman Empire – including all the Mamlūk domains in the Levant, after the Ottoman conquests of 1517 – proved to be such a very important market for European wool-based textiles.[59] Indeed, the principal thesis advanced in this paper is that such a growth in textile exports led to a relative reduction in the quantity of precious metals that was necessary to conduct this trade with the Ottoman Empire. The evidence will show at least that the extent of the 'balance of payments' deficit in European trade with the Levant and other zones within the Ottoman Empire was on a far lower order of magnitude than that experienced by the English and the Dutch East India companies in their trade with Asia in the seventeenth and early eight-

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[55] P. SPUFFORD, *Handbook of Medieval Exchange*, cit., Table II, p. lxiii.

[56] J.H. MUNRO, *Bullion Flows*, cit., Table 10, p. 151.

[57] P. SPUFFORD, *Handbook of Medieval Exchange*, cit., Table II, p. lxiii. We may assume a bimetallic ratio of about 11:1 in the 1490s.

[58] J. BACHARACH, *Monetary Movements*, cit., Table 3, p. 180. Neither Watson nor Spufford provide any mint ratios for Egypt in this period.

[59] Ashtor found that, although the Venetians in the fifteenth century exported large quantities of fustians, chiefly Lombard, only rarely are they found in Venetian galley shipments to the Levant (but perhaps they would have been shipped in cogs?). See E. ASHTOR, *L'exportation de textiles occidentaux dans le Proche Orient musulman au bas Moyen Age (1370-1517)*, in *Studi in memoria di Federigo Melis*, cit., II, pp. 303-377. [Volume no. improperly cited in Ashtor's own bibliography].

eenth centuries. In part, that European commercial success – i.e., in reducing the balance of payments 'deficit' – can be explained by very marked differences in transportation costs, especially for these textiles, with a high value:weight ratio.

Transportation and transaction costs in the international textile trade from the later fifteenth century

Thus, any study in the European textile trades with the Levant and the Ottoman Empire from the later fifteenth century requires a brief survey of the major macro-economic changes and related changes in transport and transaction costs. As Douglass North has demonstrated, the transactions sector of the economy is far more subject to and dependent upon scale economies than any other sector.[60] Demography plays a major role in determining such scale economies. Indeed, we may contend that the general recovery of Europe's population, after the late-medieval demographic catastrophes, beginning in Italy from about the mid fifteenth century, and in northwestern Europe, from the early sixteenth century, aided by the relative diminution in warfare (after the end of the Hundred Years war in 1453), reversed the late-medieval contractionary forces and thus led to a revival of the commercial structures that had prevailed in the earlier, 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 that sixteenth-century population growth was manifested with a disproportionate degree of urbanization, thus providing much larger, more concentrated, and more efficient urban markets.

Those reductions in transaction costs were aided by significant technological advances in both transportation and communications. In maritime commerce, by far the most important was the development, from about the 1450s, of the three-masted, fully-rigged 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

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[60] See D. NORTH, R. THOMAS, *The Rise of the Western World: A New Economic History*, Cambridge 1973, pp. 71-96, 134-138; D. NORTH, *Structure and Change in Economic History,* New York 1981, chapters 1-5; IDEM, *Government and the Cost of Exchange in History*, in "Journal of Economic History", 44, 1984, pp. 255-264; D. NORTH, *Transaction Costs in History*, in "Journal of European Economic History", 14, 1985, pp. 557-576; C.G. REED, *Transactions Costs and Differential Growth in Seventeenth Century Western Europe*, in "Journal of Economic History", 33, 1973, pp. 177-190; J.H. MUNRO, *The "New Institutional Economics"*, cit., pp. 1-47.

sixteenth century: so important for the trade in both cotton and wool. These ships allowed Europeans to dominate the world's shipping lanes for the next four centuries.[61] 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.[62] 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

[61] F. LANE, *Venetian Ships and Shipbuilders of the Renaissance,* Baltimore 1934, pp. 26-28; IDEM, *Technology and Productivity in Seaborne Transportation*, in *Trasporti e sviluppo economico, secoli XIII-XVIIII, Atti della quinta settimana di studio, Istituto internazionale di storia economica "F. Datini", Prato 1973*, ed. A. VANNINI MARX, Florence 1986 (Le Monnier, Istituto Internazionale di Storia Economica "F. datini", Atti delle Settimane di Studi e altri convegni, 5), pp. 233-244; republished in F. LANE, *Studies in Venetian Social and Economic History*, B. KOHL, R. MUELLER eds., London 1987 (Variorum Reprints); R. UNGER, *The Ship in the Medieval Economy, 600-1600*, London-Montreal 1980, pp. 201-250 ; IDEM, *Warships and Cargo Ships in Medieval Europe*, in "Technology and Culture", 22, 1981, pp. 233-252; C. CIPOLLA, *Guns, Sails and Empires: Technological Innovation and the Early Phases of European Expansion, 1400-1700,* New York 1965, pp. 90-131; M. ELBL, *The Caravel and the Galleon,* in *Conway's History of the Ship*, III, *Cogs, Caravels and Galleons,* ed. R. GARDINER, London 1994, pp. 91-98, pp. 91-98. See also R. MENARD, *Transport Costs and Long-Range Trade, 1300-1800: Was There a European 'Transport Revolution' in the Early Modern Era?*, in *The Political Economy of Merchant Empires: State Power and World Trade, 1350-1750,* ed. J. TRACY, Cambridge 1991, pp. 228-275.

[62] 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: H. VAN DER WEE, *Growth of the Antwerp Market*, cit., II, pp. 177-94, 325-364; H. VAN DER WEE, J. MATERNÉ, *Antwerp as a World Market in the Sixteenth and Seventeenth Centuries*, in *Antwerp: Story of a Metropolis, 16th - 17th Century,* ed. J. VAN DER STOCK, Gent 1993, pp. 19-31; H. VAN DER WEE, *Structural Changes*, cit., pp. 14-33; J.H. MUNRO, *The "New Institutional Economics"*, cit., pp. 1-47; W. BRULEZ, *L'exportation des Pays Bas vers l'Italie par voie de terre au milieu du XVIe siècle*, in "Annales: ESC"*,* 14, 1959, 3, pp. 461-491; IDEM, *The Balance of Trade*, cit., pp. 20-48; IDEM, *De firma Della Faille en de internationale handel van Vlaamse Firma's in de 16 eeuw*, Brussels 1959; F. EDLER, *Le commerce d'exportation des sayes d'Hondschoote vers Italie d'après la correspondance d'une firme anversoise, entre 1538 et 1544*, in "Revue du Nord", 22, 1936, pp. 249-265. Also to be added are the development of specialize 'commission houses' in international trade, of printed daily commercial newspapers, with commodity prices and exchange rates, etc. See: J. MCCUSKER, C. GRAVESTEIJN, *The Beginnings of Commercial and Financial Journalism: The Commodity Price Currents, Exchange Rate Currents, and Money Currents of Early Modern Europe*, Amsterdam 1991 (NEHA-Series III).

reduction in real interest rates by the mid-sixteenth century, by which time interest payments on loans had become fully legal in the Habsburg Netherlands (to 12 percent) and in England (to 10 percent).[63]

Just as the forces for economic contraction and disruption had so seriously hindered long-distance trade in the cheaper line textiles, by increasing transaction costs during the fourteenth and early fifteenth centuries, so the reversal of these forces, and the ensuing fall in transaction costs, in the later fifteenth and sixteenth centuries, promoted a renewed expansion in the international commerce in such textiles, particularly Geman (and Italian) fustians. Following the great success of the South German fustians was the remarkable revival of Hondschoote's *sayetteries* and similar Flemish *draperies légères*. By the early to mid sixteenth century, they 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. Most of these exported semi-worsted serge cloths: 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, though not as cheap and light as pure worsteds. As had been true in the thirteenth century, so the major market for the product of Low Countries' *sayetteries* proved to be the Mediterranean basin in general, and then the Spanish colonies in the Americas.[64]

[63] See H. VAN DER WEE, *Anvers et les innovations de la technique financière aux XVIe et XVIIe siècles*, in "Annales ESC", 22, 1967, pp. 1067-1089, republished as IDEM, *Antwerp and the New Financial Methods of the 16th and 17th Centuries*, in IDEM, *The Low Countries in the Early Modern World*, trans. by Lizabeth Fackelman, Aldershot 1993 (Variorum Series), pp. 145-166; H. VAN DER WEE, *Monetary, Credit, and Banking Systems*, in *The Cambridge Economic History of Europe*, V, *The Economic Organization of Early Modern Europe*, E.E. RICH, CH. WILSON eds., Cambridge 1977, pp. 290-392; J.H. MUNRO, *The Medieval Origins*, cit., pp. 505-562.

[64] 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 H. SOLY, A. THIJS, *Nijverheid in de zuidelijke Nederlanden*, in *Algemene geschiedenis der Nederlanden*, I-XII, J.A. VAN HOUTTE, et al. eds., Haarlem 1977-1979, 6, pp. 27-57, 6, pp. 27-57. See also P. STABEL, *Les draperies urbaines en Flandre au XIIIe-XVIe siècles*, in G.L. FONTANA, G. GAYOT, *Wool: Products and Markets (13th-20th Century),* Padua 2004 (Libraria Editrice Università Padova), pp. 355-380; H. VAN DER WEE, J. MUNRO, *The Western European Woollen Industries, 1500-1700*, in *The Cambridge History of Western Textiles*, ed. D. JENKINS, Cambridge-New York 2003, pp. 397-472, 439-458; L. NOORDEGRAAF, *The New Draperies in the Northern Netherlands, 1500-1800*, in *The New Draperies in the Low Countries and England, 1300-1800*, ed. N. HARTE, Oxford-New York 1997 (Pasold Studies in Textile History, 10), pp. 173-195, 217-244, 245-274.

Subsequently, as will be noted, this Flemish industry suffered a severe blow with the Revolt of the Netherlands against Spanish rule, from 1568 to 1609, when so many textile artisans fled Flanders to seek refuge both in Holland and in England (East Anglia), introducing in both regions the so-called 'New Draperies'.[65] In England itself, the subsequent rapid expansion of the New Draperies took place when the Old Draperies, producing the traditional, fine quality, heavy-weight woollens, were beginning to decline; and those changes represent by far the most important industrial transformations in Tudor- Stuart England.

Both phenomena, though chiefly resulting on the demand side from structural changes in international trade, were also the consequences, on the supply side, by the contemporary Tudor-Stuart enclosure movement. Because of both selective breeding to produce bigger sheep for urban meat markets and improved livestock feeding techniques, much of England's wool production ultimately underwent a remarkable transformation: from being predominantly very fine, short fibred wools (from small sheep with sparse pastures) to becoming much longer-stapled, coarser, strong wools (from large, well-fed sheep). That meant that most English wools, by the seventeenth century, had become more suitable for the production of long-stapled worsteds than for short-stapled fine woollens.[66] The role of both sets of English draperies in Mediterranean and Venetian trade, especially with the Ottoman Empire, during the later sixteenth and seventeenth centuries, will be the penultimate object of this study, which first, however, requires an examination of Venice's woollen cloth production and trade.

The rise of Venetian cloth production in the sixteenth century: warfare and the Sella thesis

The apparently sudden rise and very rapid expansion of the Venetian woollen cloth industry during the early and mid sixteenth century, and then its equally rapid decline in the seventeenth century, is certainly one of the very most fascinating events in the history of early-modern Mediterranean trade, and especially the trade with the Levant and Ottoman Empire. In the

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[65] See sources in the previous note; and see also below, pp. 945-952.

[66] Note that the staple length and quality of wools are together functions of the size of the sheep: from both breeding and sheep management. P. BOWDEN, *The Wool Supply and the Woollen Industry*, in "Economic History Review", 2nd ser., 9, 1956-57, pp. 44-58; IDEM, *The Wool Trade in Tudor and Stuart England*, London 1962, pp. 1-76; H. VAN DER WEE, J. MUNRO, *The Western European Woollen Industries*, cit., pp. 423-425, 452-461; J.H. MUNRO, *Spanish* Merino Wool*s and the* Nouvelles Draperie*s: an Industrial Transformation in the Late-Medieval Low Countries*, in "Economic History Review", 2nd ser., 58, 2005, 3, pp. 431-484; and the sources in n. 63.

English-speaking world certainly by far the best known history of this Ve-
netian cloth industry was that written by the Italian-born scholar, Domenico
Sella.[67] Thanks to his own research, and to that of several other Italian schol-
ars, we now possess a remarkable annual series of Venetian woollen cloth
outputs from the early sixteenth to early eighteenth centuries (Table 5).[68]

Sella's basic thesis, to explain the rise of the Venetian cloth industry, again
concerns the impact of warfare, from Charles VIII's French invasion in 1494
to the peace finally established in 1559 by the Treaty of Cateau-Cambrésis.
He contended that Venice, so well protected and isolated in its lagoon setting,
took advantage of the devastation that the various French, Imperial, and
Spanish invasions wrecked upon the previously predominant woollen indus-
tries, above all in Florence, but also in several other Tuscan and Lombard
towns. Venice had never before maintained a cloth industry of any great in-
ternational importance. In the later medieval era, its own small textile industry
had specialized in manufacturing very costly, ultra-luxury woollens, especially
scarlets, woven from the finest English wools. Sella contends that in the fif-
teenth century, its 'annual output never rose, so far as is known, beyond 3,000
cloths', an amount he compares to Venetian purchases and re-exports of
some 48,000 cloths ca. 1420.[69] Thus, in Sella's view, these sixteenth-century

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[67] D. SELLA, *Rise and Fall of the Venetian Woollen Industry*, in *Crisis and Change in the Venetian Economy in the Sixteenth and Seventeenth Centuries*, ed. B. PULLAN, London 1968, pp. 106-126; trans-
lated by the author, in a revised and expanded form, from D. SELLA, *Les mouvements longs de l'in-
dustrie lainière à Venise*, in "Annales: ESC", 12, 1957, pp. 29-45. See also IDEM, *Commerci e industrie
a Venezia nel secolo XVII*, Venice-Rome 1961; D. SELLA, *Crisis and Transformation in Venetian Trade*,
in *Crisis and Change in the Venetian Economy in the Sixteenth and Seventeenth Centuries*, ed. B. PULLAN,
London 1968, pp. 88-105; translated by the author, also in a revised and expanded form, from
D. SELLA, *Il declino dell'emporio realtino*, in *La civiltà veneziana nell'età barocca*, Venice 1959.

[68] The sixteenth-century statistics (1516-1605) were first published in P. SARDELLA,
L'Épanouissement industriel de Venise au XVIᵉ siècle: Un beau texte inédit, in "Annales ESC", 2, 1947,
3 , pp. 195-196; the rest of the data, to 1713, were published in D. SELLA, *Rise and Fall of the
Venetian Woollen Industry*, cit., pp. 29-45. However, this still very well known series contains a
number of statistical errors, which have now been largely corrected in: W. PANCIERA, *L'Arte
matrice: I lanifici della Repubblica di Venezia nei secoli XVII e XVIII,* Treviso 1996 (Fondazione
Benetton Studi Ricerche-Canova Editrice, Studi veneti, 5), Table 2, pp. 42-43, which also ex-
tends 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.

[69] According to D. SELLA, *Rise and Fall of the Venetian Woollen Industry*, cit., p. 111: 'The
Venetian woollen industry, whose origins go back to the thirteenth century, remained a neglible
part of the city's economy until the great upsurge of the sixteenth centuries', citing in particular
N. FANO, *Richerche sull'arte della lana a Venezia nel XIII e XIV secolo*, in "Archivio Veneto", 1936,

wars allowed Venice to replace all other Italian cities to become the over-whelmingly decisive leader in exporting fine woollen cloths, especially to the Ottoman Empire (including the Levant, from 1517).

That thesis unfortunately ignores the damages that Venice herself suf-fered during some of these wars, indeed in narrowly escaping total annihila-tion – in the greatest threat to its existence since the Battle of Chioggia (1381).[70] First, in 1508, Venice faced a seemingly invincible coalition of very hostile and very formidable enemies: the Holy Roman Emperor (Maximilian), France (Louis XII), the Papacy (Pope Julius II), and the King of Hungary, who had formed an alliance by the Treaty of Cambrai, with the objective of recapturing or seizing Venice's recent Italian acquisitions, outside her tradi-tional her traditional 'Venetia' jurisdiction. In May 1509, the French- led army, at the Battle of Agnadello (on the Adda), 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 ter-ritories – 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 1516 Concordat of Bologna in 1516. These wars may explain why the very first recorded output, in that same year – just 1,310 pieces in 1516 – was so very small.

The Ottoman and Portuguese threats to Venetian prosperity in the Levant Trade

Furthermore, Venice had already been severely threatened – in both mili-tary but especially in commercial terms – by a conjunction of other seeming disasters at the hands of the Ottoman Turks and the Portuguese. First, as is so well known, the Ottoman Turks, under Sultan Mehmed II (r. 1451-1481), had finally vanquished the remnants of the old Byzantine Empire, in seizing Constantinople in 1453, where Venice had long maintained important com-mercial privileges. He then completed the conquest of Serbia (1459) and seized the Morea (1459), Bosnia and Herzegovina (1463-64), the southern Crimea (1475), and northern Albania (1478-79). During these later conquests, from 1463 to 1479, the Turks were also at war with Venice, seizing in particu-lar, in 1470, the vitally important Aegean island of Euboea (Évvoia, also

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pp. 72-212. For the nature and costs of scarlets, see J.H. MUNRO, *The Medieval Scarlet and the Eco-nomics of Sartorial Splendour*, in *Cloth and Clothing in Medieval Europe*, cit., pp. 13-70.

[70] See D. SELLA, *Rise and Fall*, cit., pp. 113-115; A. GRANT, *History of Europe from 1494 to 1610*, New York 1951⁵, pp. 52-54, 65-69; F. LANE, *Venice: A Maritime Republic*, Baltimore-London 1973, pp. 242-245.

known as Negropont); but the Venetians partially compensated for that loss by gradually annexing Cyprus (1473-89).

The next Ottoman Sultan, Bayezid II (r. 1481-1512), struck much more disastrous blows against Venice: first in injuring its Levant trade in wars with the Mamlūks, in 1485-91, and then, more seriously, by inflicting a decisive defeat on the Venetian navy at the Battle of Zonchio in 1499, which led to the Turkish conquest of most of the Venetian strongholds in southern Greece and many others along the Dalmatian coast. In 1503, a greatly weakened Venice was forced to sign a peace treaty that ceded more of Greece and the Dalmatian coast (Albania) to the Ottoman Empire, events that Frederic Lane contended produced the 'turning point of Venetian history'. Worse was still yet to come. In 1514, the next Ottoman Sultan, Selim I (r. 1512-20), launched an assault on Safavid Persia (1501-1736) and then, with much greater success, in 1516-1517, he subjugated the Sherrif of Mecca's Arabian domains and conquered the Mamlūk domains in Egypt, Palestine and Syria (i.e., the Levant). Next to fall to the Turks were Rhodes, in 1522, and Algiers, in 1529, conquests that thus allowed the Ottoman Empire to encircle 'the whole Mediterranean Sea from Albania to Morocco'.[71] Surely the Venetians could not have entertained any hopes of gaining from the hostile Turks the previous commercial privileges that they had so long enjoyed in the Mamlūk domains.

Even before these events, of course, Portugal had already established its direct sea route to the East Indies, in 1499-1500, and in 1501 King Manuel I established Portugal's official European staple for Asian spices at Antwerp, where Portuguese merchants sought the necessary commodities with which to buy those Asian spices: namely, South German silver and also copper – similarly scarce in Asia (except in Japan); and of course they also sought there the financial services of the Fuggers, Welsers, Hochstetters, and other South German merchant banking firms.[72] From 1496 to 1502, Venetian spice purchases at Alexandria and Beirut fell by 75 percent; and from 1504 to 1515, there were virtually no purchases at Alexandria, and few at Beirut. Indeed in 1513, only 314,000 lb. of Asian spices entered Beirut, compared to 4,256,000 lb (1,930,488 kg) that arrived in Europe via Lisbon.[73]

[71] See *Ibid.*, pp. 245-249; H. INALCIK, *An Economic and Social History of the Ottoman Empire*, I-II, Cambridge 1994, I, *1300-1600*, pp. 15-22, 193-195; F. BRAUDEL, *The Mediterranean and the Mediterranean World in the Age of Philip II*, translated by Sian Reynolds, I-II, London-New York 1972-73, II, pp. 661-669.

[72] See H. VAN DER WEE, *Growth of the Antwerp Market*, cit., II, 113-44 ; J.H. MUNRO, *The Monetary Origins*, cit., pp. 1-34.

[73] H. INALCIK, *An Economic and Social History*, cit., I, pp. 340-342, and Table I, p. 68 (in lb., whose weight is not specified).

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Did the Portuguese therefore succeed in diverting much more of that silver away from Venetian commerce to the Antwerp market? In the absence of direct evidence on silver flows, we can cite some very striking statistics on the Fugger House's exports of Hungarian copper in these years (Table 4): the share going to Venice fell from 32.1 percent in 1499-1501 to just 0.29 percent in 1516-17 (5.16 percent in 1526-30), while the share going to Antwerp rose from 5.22 percent in 1496-1500 to 62.5 percent in 1514-15 (58.4 percent in 1511-15; 58.85 percent in 1526-30).[74]

In view of all these wars and commercial disasters, the subsequent rise of the Venetian woollen cloth industry seems all the more remarkable. But let us admit at the outset that the Ottoman Turkish and Portuguese threats to Venetian commerce and prosperity were, in fact, ephemeral. Indeed, once again, to use the trite phrase, Venice snatched victory from the jaws of defeat. As is now so well known, the Portuguese control of the East Indies spice trades and of the Indian Ocean shipping lanes, despite superior naval power, with their heavily gunned carracks, was at best tenuous. From the 1530s, the Portuguese were no longer able to control the Straits of Malacca or to prevent the rapid rise of a rival commercial power in North Sumatra: the sultanate of Aceh (Atjeh), which, with Ottoman support, defeated the Portuguese fleet in 1537. Nor did the Portuguese succeed in controlling the port that governed access to the Red Sea: Aden, which also fell to the Ottoman Turks, in 1538. Subsequently a Muslim alliance of Aceh, Gujerat (in NW India), and the Ottoman Turks succeeded in supplying a steady flow of spices via the Persian Gulf routes (despite Portuguese control of Hormuz) and the Red Sea routes, via Jedda, which thus reached the Mediterranean ports of Alexandria, Beirut, and Aleppo, allowing the Venetians to regain control over half of the spice trade -- certainly from the 1550s.[75] Obviously Turkish control of all these ports did not provide the expected impediment to Venetian commerce; indeed, as early as the 1503 peace treaty with the Ottoman Empire, the Vene-

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[74] H. VAN DER WEE, *Growth of the Antwerp Market*, cit., I, pp. 522-523, Appendix 44:1; J.H. MUNRO, *The Monetary Origins*, cit., Table 1.7, p. 26. For the Levantine copper trade, see also M. DENZEL, *Metalle im Levantehandel im 14. und 15. Jahrhundert: Forschungsstand und Forschungsfragen*, in *Der Tiroler Bergbau und die Depression der europäischen Montanwirtschaft im 14. und 15. Jahrhundert*, R. TASSER, E. WESTERMANN, G. PFEIFER eds., Munich-Vienna 2005 (Studien Verlag, Akten der internationalen bergbaugeschichtlichen Tagung Steinhaus), pp. 45-60.

[75] H. INALCIK, *An Economic and Social History*, cit., I, pp. 327-359, contending that this Muslim alliance achieved its greatest successes against the Portuguese from c.1560 to 1580, or following the Ottoman naval defeat in the Persian Gulf, in 1554. He also notes that the first major pepper shipments from Atjeh (Aceh) had arrived in the Red Sea as early as 1530. Gujerat was an independent Muslim sultanate (with a large Hindu population) from 1401 until 1576, it was annexed to the Moghul (Mughal) Empire, under Akbar the Great (r. 1556-1605).

tians had recognized that their only hope of regaining a major share of the Asian spice trades lay in co-operation with the Ottomans, in opposing the Portuguese.[76]

The (temporary) decline of the Florentine and the rise of the Venetian woollen industry: the Chorley Thesis

The role of the Ottomans in the Venetian textile trades in the sixteenth century now requires closer examination. More recently, Patrick Chorley has offered an entirely different and, in my view, far more convincing explanation for the rise of the sixteenth-century Venetian cloth industry, in terms of generally very different problems that were plaguing the previously leading textile manufacturer: Florence, and specifically its own relations with the Ottoman Empire. First, Chorley demonstrated that the Florentine woollen industry reached its apogee a full three decades after Charles VIII's 1494 invasion: in the late 1520s, with an output of about 20,000 pieces, perhaps double that of a century earlier. Of this industry's two sections, the much older, more traditional San Martino branch produced about 4,000 to 5,000 very fine and very costly woollens that were still made uniquely from the finest English wools. The other newer Garbo branch also produced genuine woollens, but manufactured them from a wide variety of wools: domestic Italian (*lana matricina*, from the Abruzzi region), Provençal, Majorcan, and, with increasing importance Spanish *merino* wools.[77] For reasons that I have recently explored elsewhere, these *merino* wools were now rivalling all but the very finest English wools in quality, while selling for a much lower price.[78] Since wools were always the prime cost component in textile production, the *panni di Garbo* sold for far lower prices than did the San Martino woollens. According to Chorley's estimate, the Garbo branch of the industry, in the 1520s, was accounting

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[76] H. INALCIK, *An Economic and Social History*, cit., I, p. 344. For Genoa's commercial relations with the Ottoman Empire, see K. FLEET, *European and Islamic Trade in the Early Ottoman State: the Merchants of Genoa and Turkey*, Cambridge-New York 1999 (Cambridge Studies in Islamic Civilization, Cambridge University Press), and for the cloth trade, see pp 95-111.

[77] P. CHORLEY, *Rascie and the Florentine Cloth Industry during the Sixteenth Century*, in "The Journal of European Economic History", 32, 2003, 3, pp. 487-526, in particular, pp. 487-489, and Appendix One, pp. 515-19; and also IDEM, *The Volume of Cloth Production in Florence, 1500-1650: An Assessment of the Evidence*, in G.L. FONTANA, G. GAYOT, *Wool: Products and Markets*, cit., pp. 551-572. For the important role that the Italian Adriatric port of Ancona played in marketing Florentine woollens, at least until the 1520s, to the Ottoman Empire, see P. EARLE, *The Commercial Development of Ancona, 1479-1551*, "Economic History Review", 2nd ser., 22:1, 1969, pp. 28-44.

[78] J.H. MUNRO, *Spanish* Merino Wool*s*, cit., pp. 431-84. See n. 66 above.

for 75 percent of the total production, i.e., about 15,000 woollens, but for only 50 percent of the total value of sales, estimated to have been about 600,000 florins (with the same value as Venetian ducats).[79]

Both branches of the Florentine cloth industry, but especially the Garbo, had enjoyed a very considerable success in Levantine markets during the later fifteenth and early sixteenth centuries.[80] The fact that the Italians had been so successful in marketing not only their own but other European woollens in the Levant is hardly evidence of any Mamlūk 'industrial decline', as Ashtor has so frequently argued.[81] 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.[82] 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 (but not, of

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[79] P. CHORLEY, *Rascie*, cit., pp. 487-526, in particular, pp. 487-89, and Appendix One, pp. 515-519.

[80] H. HOSHINO, M. MAZZAOUI, *Ottoman Markets for Florentine Woolen Cloth in the Late Fifteenth Century*, in "International Journal of Turkish Studies", 3, 1985-86, pp. 17-31. See also H. HOSHINO, *Industria tessile e commercio internazionale nella Firenze del tardo Medioevo*, F. FRANCESCHI, S. TOGNETTI eds., Florence 2001 (Leo S. Olschki).

[81] See E. ASHTOR, *Levant Trade*, cit., pp. 433-512; IDEM, *A Social and Economic History*, cit., 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 [Mamluk] collapse'); E. 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 probelemi*, Atti dell'II Convegno Internazionale di Storia della Civiltà Veneziana, I, Florence 1977, pp. 307-326; reprinted in IDEM, *Technology, Industry and Trade: the Levant versus Europe, 1250-1500*, ed. B.Z. KEDAR, Hampshire 1992 (Variorum Collected Studies Series CS372), 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'); IDEM, *The Economic Decline of the Middle East during the Later Middle Ages: an Outline*, in "Asian and African Studies", 15, 1981, pp. 253-286; reprinted in IDEM, *Technology, Industry and Trade*, cit.; and also IDEM, *Studies on the Levantine Trade in the Middle Ages*, London 1978 (Variorum Collected Studies CS74). See also IDEM, *L'exportation de textiles*, cit., pp. 303-377, cited in n. 72 above.

[82] See J.H. MUNRO, *The Medieval Scarlet,* cit., pp. 13-70.

course, to the cottons and silks). 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.[83]

To explain the sudden decline of the traditional Florentine woollen industries, and the subsequent expansion of the Venetian, from ca. 1530, Chorley cites two major factors. The first, and most important, was the Florentine loss of its dominance in those 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 the Venetians certainly did — from the spice trade. For some Florentine firms, the Ottoman 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. 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.[84]

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[83] See comparative values of wools and textiles, with prices for Europe, the Byzantine Empire, and the Mamlūk domains: in IDEM, *Wool Price Schedules and the Qualities of English Wools in the Later Middle Ages*, in "Textile History", 9, 1978, pp. 118-169; IDEM, *Industrial Transformations in the North-West European Textile Trades, c. 1290-c. 1340: Economic Progress or Economic Crisis?* in *Before the Black Death: Studies in the 'Crisis' of the Early Fourteenth Century*, ed. B.M.S. CAMPBELL, Manchester-New York 1991 (Manchester University Press), pp. 110-148; IDEM, *The Origins of the English 'New Draperies': The Resurrection of an Old Flemish Industry, 1270-1570*, in *The New Draperies in the Low Countries and England, 1300-1800*, ed. N. HARTE, Oxford-New York, 1997 (Pasold Studies in Textile History, 10), pp. 35-127; IDEM, *The Medieval Scarlet,* cit., pp. 13-70; IDEM, *Medieval Woollens*, cit., pp. 181-227; IDEM, *Spanish* Merino Wool*s*, cit., pp. 431-484.

[84] P. CHORLEY, *Rascie*, cit., pp. 487-491; A.J. GRANT, *History of Europe from 1494 to 1610*, New York 1951, pp. 136-142, 204-205. See also P. EARLE, *Commercial Development of Ancona*, cit., 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).

Venetian cloth production and exports in the sixteenth Century

In the light of all the foregoing historical evidence, and of the circumstances just analysed, we may now better appreciate the significance of the (corrected) statistics on Venetian cloth production, from 1516 to 1723 (Table 5). From that earliest recorded output, production grew from a mere 1,310 pieces to reach its first peak in 1569, with 26,541 pieces.[85] If, however, we look at these production statistics in terms of quinquennial means, we find that mean annual production did not exceed 10,000 pieces until 1546-50; and the much more rapid growth of output from the mid-1540s (to the late 1560s) may be related to Venice's ability to regain a significant share of the Asian spice trade, via Ottoman ports: i.e., in effect exchanging woollens for at least some spices.

From evidence on cloth widths these appear to be genuine heavy-weight woollen broadcloths: 1.80 metres compared to 1.60 metres for the English. Such woollens were now, evidently, manufactured chiefly from Spanish *merino* wools (i.e., substituted for the finer English wools); but the production statistics 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.[86]

For the peak period of mid-sixteenth century production, in 1566-70, quinquennial mean production was 18,513.20 woollen cloths; but production had in fact slumped sharply in the year 1570 – at the time of the Ottoman seizure of Cyprus and then the Ottoman defeat at maritime Battle of Lepanto – to just 9,462 pieces. Cloth production then recovered, but with a slower rate of annual growth than before the 1560s, and with a series of often severe oscillations. That diminished growth rate may 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.[87] Venetian cloth production itself

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[85] See n. 68 above and Table 5 for the Venetian cloth production statistics.

[86] W. PANCIERA, *Qualità e costi di produzione nei lanifici veneti (secoli XVI-XVIII)*, in *Wool: Products and Markets (13th - 20th Century)*, G. L. FONTANA, G. GAYOT eds., Padua 2004 (Libraria Editrice Università Padova), pp. 420-22, 429-31 (Tables 1-2); IDEM, *L'Arte Matrice*, cit., pp. 39-51.

[87] See P. CHORLEY, *Rascie*, cit., Table 1, p. 516: in *panni corsivi*; IDEM, *The Volume of Cloth Production*, cit., 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

reached its ultimate peak, of 28,728 pieces, in 1602 – or with a quinquennial mean production of 23,572.80 pieces in 1601-05. Production 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. [88]

The decline and fall of Venetian cloth production in the seventeenth century: the traditional views

The subsequent seventeenth-century slump and then virtual collapse of the Venetian cloth industry (and of the Florentine and 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', another inevitable *deus ex machina* argument for industrial decline.[89]

9,492 pieces). We also know that the primary overseas market for the Medici firm's woollen cloths was the Levant. R. DE ROOVER, *A Florentine Firm,* cit., p. 101. See also H. VAN DER WEE, J. MUNRO, *The Western European Woollen Industries*, cit., pp. 407-409, 425-427. See also P. MA-LANIMA, *An Example of Industrial Reconversion: Tuscany in the Sixteenth and Seventeenth Centuries*, in *The Rise and Decline of Urban Industries in Italy and the Low Countries (Late Middle Ages – Early Modern Times)*, ed. H. VAN DER WEE, Leuven 1988 (Leuven University Press), pp. 63-74; and also H. VAN DER WEE, J. MUNRO, *The Western European Woollen Industries*, cit., pp. 407-408, 425-427.

[88] See note 68 and Table 5 for the statistics.

[89] D. SELLA, *Rise and Fall of the Venetian Woollen Industry*, cit., pp. 106-126 (quotations on pp. 120-121); D. SELLA, *Crisis and Transformation*, cit., pp. 88-105; C.M. CIPOLLA, *The Economic Decline of Italy*, in *Crisis and Change in the Venetian Economy in the Sixteenth and Seventeenth Centuries*, ed. B. PULLAN, London 1968, pp. 127-145 [Translated by Janet Pullan from C.M. CIPOLLA, *Il declino economico dell'Italia*, in *Storia dell'economia italiana*, Turin 1959 (Boringhieri), which in turn was a revised and expanded version of IDEM, *The Decline of Italy: the Case of a Fully Matured Economy*, in "Economic History Review", 2nd ser., 5, 1952, pp. 178-187; B. PULLAN, *Wage Earners and the Venetian Economy, 1550-1630*, in "Economic History Review", 2nd ser., 16, 1964, 3, pp. 407-426; reprinted in *Crisis and Change in the Venetian Economy in the Sixteenth and Seventeenth Centuries*, ed. IDEM, London 1968, pp. 146-174; F. BRAUDEL, P. JEANNIN, J. MEUVRET, R. ROMANO, *Le déclin de Venise au XVIIe 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; R. RAPP, *The Unmaking of the Mediterranean Trade Hegemony: International Trade Rivalry and the Commercial Revolution*, in "Journal of Economic History", 35, 1975, pp. 499-525; R. RAPP, *Industry and Economic Decline in Seventeenth-Century Venice*, Cambridge 1976; R. DAVIS, *England and the Mediterranean, 1570-1670*, in *Essays in the Economic and Social History of Tudor and Stuart England*, ed. F.J. FISHER, London 1961, pp. 117-137. For a good and fair survey, see S. CIRIACONO, *Mass Consumption Goods and Luxury Goods: the*

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. Certainly labour productivity can and did vary enormously; and generally low rural wages or low money-wage rates – a supposed advantage of the largely rural or small-town English woollen cloth industry – are explained by a productivity, set of skills, and education that were substantially inferior to that 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 necessarily injurious to an industry's fortunes. On the contrary, for luxury or fine cloth production, quality considerations (affecting the slope of the demand curve in that monopolistic competition) were generally a more important consideration than costs and prices; and thus guild regulations can be fully justified to ensure the quality controls and hence the industry's reputation and market shares in foreign lands.[90] Let us remember such guilds did not hinder the rise and expansion of the Flemish, Florentine, and indeed the Venetian cloth industries. Furthermore, the extent to which the English woollen cloth industry had, by the mid

De-Industrializaton of the Republic of Venice from the Sixteenth to the Eighteenth Century, in *The Rise and Decline of Urban Industries*, cit., pp. 41-61. He notes the importance of plague in the 1630s, for industrial decline.

[90] See in particular these arguments in J. MUNRO, *Urban Regulation and Monopolistic Competition in the Textile Industries of the Late-Medieval Low Countries*, in *Textiles of the Low Countries in European Economic History. Proceedings of 10th International Economic History Congress,* E. AERTS, J. MUNRO eds., Leuven 1990 (Studies in Social and Economic History, 19), pp. 41-52; reprinted in J. MUNRO, *Textiles, Towns, and Trade: Essays in the Economic History of Late-Medieval England and the Low Countries*, London 1994 (Variorum Collected Studies series CS 442); IDEM, *The Symbiosis of Towns and Textiles*, cit.,. For Venice itself, and the same role of guilds in the silk industry, see L. MOLÀ, *The Silk Industry of Renaissance Venice,* Baltimore-London (The Johns Hopkins University Press), pp. 55-160.

sixteenth century, become subject to Parliamentary legislation and regulation is often overlooked. [91]

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?[92] The answer this time, for the seventeenth century, is decisively no: in terms, at least, of the higher-valued, heavy-weight woollens. For, as noted earlier, 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 lower than those incurred by the far distant English industry, the Venetians should have enjoyed that cost advantage. 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 role of England's Levant Company: English textile exports to the Ottoman Empire, and the decline of the Venetian woollen cloth industry, 1580-1720

The true advantage that the English did enjoy, dating from the later sixteenth century, was – as the Venetian advantage had once been – 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 Selim II succeeded in seizing Cyprus, and thus control of the Aegean Sea, from Venice, with a resulting massacre that horrified Christian Europe. The Papacy

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[91] See Great Britain, Record Commission (T.E. TOMLINS, J. RAITHBY, et. al, eds.), *Statutes of the Realm*, I-VI, London,1810-22, IV:i, pp. 136-137 (5-6 Edwardi VI, cap. 6, pt. 1); G. RAMSAY, *The Wiltshire Woollen Industry in the Sixteenth and Seventeenth Centuries,* London 1943; 2nd ed. 1965).

[92] See above, pp. 921-922 and nn. 31-32 . For relative wool costs, as a share of total production costs, in the Florentine cloth industry, see R. GOLDTHWAITE, *The Florentine Wool Industry in the Late Sixteenth Century: a Case Study*, in *"*The Journal of European Economic History*"*, 32, 2003, 3, pp. 527-554. Tables 2-3, p. 537; R. DE ROOVER, *A Florentine Firm,* cit., Appendix IV, p. 118.

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 Mediterranean basin, sought a new European alliance, one more reliable than the French had been, particularly as a counterweight to Venetian power.[93]

The English quickly responded, for the Turks now offered them their very first major and most welcome opportunity to enter into and expand their Mediterranean trade.[94] 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 kerseys; and their sales seem to have been not that successful, despite Venetian complaints about competition from lower-priced textiles. Then, from the 1590s, Levant Company merchants began selling larger and larger quantities of the far finer and far more expensive Suffolk broadcloths, especially the Spanish Medley 'superfines', which soon superseded the kerseys and then rapidly gained a major share of Ottoman markets, at the direct expense of the Italian, French, and Dutch. 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

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[93] A.J. GRANT, *History of Europe*, cit., pp. 207-225; F. BRAUDEL, *The Mediterranean*, I, pp. 615-629.

[94] 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 G. PAGANO DE DIVITIIS, *Mercanti inglesi nell'Italia del Seicento: Navi, traffici, egemonie,* Venice 1990 (Marsilio Editore), republished as EADEM, *English Merchants in Seventeenth-Century Italy*, trans. by Stephen Parkin, Cambridge 1997 (Cambridge University Press, Cambridge Studies in Italian History and Culture), p. 5. On the Levant Company, see also pp. 1-35.

percent each, and the Dutch to just 8 percent.[95] 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.[96]

One of her most significant observations about the Levant Company's trade with the Ottoman empire concerns the balance of payments: very different indeed from what Ashtor had found for the Venetian Levant trade in the 1490s. For the Company's payments for purchases in the Levant made in bullion and specie ranged from only 20 to 35 percent, almost the reverse of the statistics that Ashtor provided for Venice's Levant trade in the 1490s.[97] Since then, evidently, European textile exports had diminished the relative need for precious metals in conducting this Levantine trade.

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 precent of the market for these woollens, while northern Europe accounted for only 37.6 percent.[98]

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.[99] Equally important is the fact that much of this

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[95] G. PAGANO DE DIVITIIS, *English Merchants*, cit., 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 R. RAPP, *The Unmaking of the Mediterranean Trade*, cit., pp. 499-525.

[96] G. PAGANO DE DIVITIIS, *English Merchants*, cit., Table I.1, p. 33.

[97] *Ibid.*, p. 25, also citing R. DAVIS, *Aleppo and Devonshire Square: English Traders in the Levant in the Eighteenth Century*, London 1967, pp. 196-197.

[98] G. PAGANO DE DIVITIIS, *English Merchants*, cit., Table I.1, p. 34; based on C.G.A. CLAY, *Economic Expansion and Social Change: England, 1500-1700*, II, *Industry, Trade, and Government*, Cambridge-New York 1984, Table XI, p. 142.

[99] See P. EARLE, *Commercial Development of Ancona*, cit., pp. 40-41; F. BRAUDEL, *The Mediterranean*, cit., I, pp. 397-398; O.L. BARKAN, *La "Mediterranée" de Fernand Braudel vue d'Istamboul,* in

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. 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'.[100]

At the same time, in many warmer parts of Mediterranean lands, the Levant Company was also selling even larger quantities of the semi-worsted or serge-type cloths, far lighter weight and much cheaper fabrics, which were the products of the aforementioned and so-called New Draperies.[101] In 1640, when textiles still accounted for almost all of London's 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.[102] 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).[103] 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.[104]

"Annales: Économies, sociétés, civilisations", 9, Jan.-March 1954, pp. 191-193; H. İNALCIK, *Economic and Social History of the Ottoman Empire*, I, pp. 25-43: he states (p. 29) that 'Barkan's figures must be exaggerated'; but he does not provide an alternative estimate. See also J. DE VRIES, *Population*, in *Handbook of European History, 1400 - 1600: Late Middle Ages, Renaissance and Reformation*, T. BRADY, H. OBERMAN, J. TRACY eds., I-II, Leiden-New York 1994 (E.J. Brill,), I, *Structures and Assertions*, Table 1, p. 13

[100] R. DAVIS, *England and the Mediterranean*, cit., pp. 117-126 (quotation on pp. 122-123), contending (p. 125) that the Levant Company's early 17th century trade was largely 'the exchange of broadcloth for raw silk'; H. VAN DER WEE, J. MUNRO, *The Western European Woollen Industries*, cit., pp. 456-461.

[101] See above, p. 934.

[102] C.G.A. CLAY, *Economic Expansion,* cit., Table XIII, p. 144.

[103] G. PAGANO DE DIVITIIS, *English Merchants*, cit., Table 5.6, p. 170.

[104] J. 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); H. VAN DER WEE, J. MUNRO, *The Western European Woollen Industries*, cit., Table 8.6, p. 457; C.G.A. CLAY, *Economic Expansion,* cit., 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).

Braude's 'dumping thesis' to explain the Levant Company's success in marketing English woollen textiles

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.[105] His thesis is that its merchants did so in order to gain 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.[106] 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 suit-

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[105] B. BRAUDE, *International Competition and Domestic Cloth in the Ottoman Empire, 1500 - 1650: A Study in Undevelopment*, in "Review (Fernand Braudel Center)", 2, 1979, 3, pp. 437-451. His contentions are repeated, but with no new evidence, in IDEM, *The Rise and Fall of Salonica Woollens, 1500-1650: Technology Transfer and Western Competition*, in "Mediterranean Historical Review", 6, 1991, pp. 216-236; reprinted in IDEM, *Jews, Christians and Muslims in the Mediterranean World after 1492*, ed. A.M GINIO, London 1992, pp. 216-236, esp. pp. 228-236. 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 17th 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 17th century, when England, enjoying a perfectly stable coinage, was experiencing deflation, from the 1640s. See S. PAMUK, *Monetary History of the Ottoman Empire*, cit., pp. 131-48; Appendix II, pp. 235-240, especially Graph A-1, p. 236. For English prices, see H. PHELPS BROWN, S. HOPKINS, *Seven Centuries of the Prices of Consumables*, cit., pp. 296-314.

[106] B. BRAUDE, *International Competition*, Tables I and II, p. 441; Tables III and IV, pp. 444-445.

able 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 Winchombe kerseys, Devonshire dozens, West Country broadcloths, *panni di Londra*, or Sussex 'superfine Spanish medleys'?.[107] 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 Westminister 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.[108] 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 had to spend 320 days' wages, well more than a year's annual wage income (at 210 days' employment).[109] Braude does not, however, cite another of Beveridge's cloth price series: for broadcloths purchased for Westminister scholars.[110] 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.[111] 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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[107] See, for example, the text in n. 83, above.

[108] W. BEVERIDGE, *Prices and Wages in England from the Twelfth to the Nineteenth Century*, I: *Price Tables: Mercantile Era,* London 1939 (Longman Green) reissued London:1965 (Frank Cass and Co, Ltd.), p. 183-

[109] The daily wage for master masons in Oxford and Cambridge was then 12d sterling (1s). H. PHELPS BROWN, S. HOPKINS, *Seven Centuries of Building Wages*, in "Economica", 22, 87, 1955, pp. 195-206; reprinted in H. PHELPS BROWN, S. HOPKINS, *A Perspective of Wages and Prices*, London 1981, pp. 1-12.

[110] W. BEVERIDGE, *Prices and Wages*, p. 193.

[111] 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.[112]

English naval power and Mediterranean commerce

The other 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.[113] It is indeed significant to note that the total tonnage of the English

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[112] 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: in *Statutes of the Realm*, I, p. 383. In May 1663, Parliament repealed its provisions concerning bullion exports: in Statute 15 Carolus II, c. 7, in *Statutes of the Realm*, V, p. 451, sec. 9. That legislation was influenced by arguments set forth by the East India Company: in THOMAS MUN, *England's Treasure by Forraign Trade* [1664] (reissued Oxford 1937).

[113] R. DAVIS, *England and the Mediterranean*, cit., pp. 126-137. See also IDEM, *English Overseas Trade, 1500 – 1700,* London 1973, pp. 20-31; IDEM, *The Rise of the English Shipping Industry*, cit., pp. 1-57, 228-256; G. PAGANO DE DIVITIIS, *English Merchants*, cit., 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'.

merchant fleet rose from just 50,000 tons in 1572 to 340,00 tons in 1686.[114] At the same time, as several historians have argued, and most recently and most eloquently 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 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; and 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.[115]

The Dutch and English 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 Vereinige Oost-Indisch Compagnie (United East India Co: VOC), 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). The two, but most especially the Dutch Company, 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.

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[114] *Ibid.*, Table 2.1, p. 43; R. DAVIS, *The Rise of the English Shipping Industry*, cit., pp. 7, 10, 15.
[115] G. PAGANO DE DIVITIIS, *English Merchants*, cit., pp. 36-46, and the many secondary sources cited here.

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.

Conclusions on Bullion Flows and Europe's Balance of Payments with the Islamic World.

That export trade of the two East India Companies in the Indian Ocean basin involved a vast expansion in silver shipments. From 1660 to 1720, their combined export was 3,437,557.2 kg of silver; and for the English East India Company itself, during these six decades, silver accounted for 81.35 percent of the precious metals shipped to India; and 'treasure' accounted for 78.94 per cent and thus merchandise sales accounted for only 21.06 percent of the value of the Company's imports from Asia into Europe. (Tables 6-8)[116] That represents a far greater 'deficit' in Europe's balance of payments in this region, compared to both the Venetian and then English trade in the Levant, and with the Ottoman Empire generally – where of course textiles played a far greater role (and thus diminishing the relative role of precious metals) than they could possibly have done in the Indian Ocean basin.

But once, more such silver shipments posed no serious problems for the European economy, since the influx of silver from the Spanish American mines generally exceeded the outflow. And if that silver surplus was diminishing in the later seventeenth century it was soon replenished, from the early eighteenth century, by new silver mining booms in Mexico.[117] From the per-

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[116] F.S. GAASTRA, *The Exports of Precious Metal from Europe to Asia by the Dutch East India Company, 1602-1795 A.D.*, in *Precious Metals in the Medieval and Early Modern Worlds*, ed. J.F. RICHARDS, Durham N.C. 1983, pp. 447-476; K.N. CHAUDHURI, *Treasure and Trade Balances: the East India Company's Export Trade, 1660-1720*, in "Economic History Review", 2nd ser., 21, 1968, pp. 480-502, Table 1, pp. 497-498. In the English East India Company's early history, however, from 1601 to 1624, it exported a total of £753,336 in precious metals ('treasure') and £351,236 in merchandise, for an aggregate export value of £1,104,572, so that precious metals then accounted for a somewhat lower percentage of the total value: 68.20%. IDEM, *The East India Company and the Export of Treasure in the Early Seventeenth Century*, in "Economic History Review", 2nd ser., 16, 1, 1963, p. 24.

[117] P. BAKEWELL, *Mining in Colonial Spanish America*, in *The Cambridge History of Latin America*, 2, *Colonial Latin America*, ed. L. BETHELL, Cambridge-New York 1984 (Cambridge University Press), pp. 105-151; P. BAKEWELL, *Silver Mining and Society in Colonial Mexico: Zacatecas, 1546 – 1700*, Cambridge 1971; H.E. CROSS, *South American Bullion Production and Export, 1550-1750*, in *Precious Metals in the Later Medieval and Early Modern Worlds,* ed. J.F. RICHARDS , Durham N.C. 1983, pp. 425-439; R.L. GARNER, *Long-term Silver Mining Trends in Spanish America: A Comparative Analysis of Peru and Mexico*, in "American Historical Review", 67, 1987, 3, pp. 405-430; D.A. BRADING, *Mexican Silver Mining in the Eighteenth Century: the Revival of Zacatecas*, in "Hispanic American Historical Review", 50, 1970, 4, pp. 665-681.

spective of four centuries of economic history, we may observe that, in exporting so much 'treasure', silver especially, to the Levant and Asia – most of which was in the Islamic world — the Venetians, the Portuguese, the English, the Dutch (and other Europeans) promoted the growth of the European and indeed the global economy, through the enormous expansion in trade that such precious metals generated. The fact that so much of these precious-metal exports took place during the inflationary Price Revolution era and the fact that the bimetallic ratio had risen (in England) from 10.33:1 in 1464 to 14.485 in 1660 together prove that western Europe, despite such exports, had long enjoyed a surplus of silver.[118]

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[118] My own calculations of the official bimetallic mint ratios indicate a rise from 12.109 in 1604 to 13.363 in 1612 to 13.348 in 1623 to 14.485 in 1660 to 15.210 in 1718 (remaining at this level until 1815). Based on data supplied in CH. CHALLIS, *Appendix I: Mint Output, 1220-1985*, in *A New History of the Royal Mint*, ed. IDEM, Cambridge 1992, pp. 673-698.

Table 1. **Estimates of Venice's 'Balance of Payments Deficit' with the Levant in the 1490s (according to Eliyahu Ashtor)**

Aspects of the Levant Trade	Total Value of Imports from the Levant as valued in Venetian ducasts	Total Value of Merchandise Exports to the Levant as Valued in Venetian ducats	Total Value of Precious Metal Exports to the Levant (Coin & Bullion) in Venetian ducats	Percentage of the trade conducted in precious metals
Galley Trade with Alexandria and Beirut: minimum	450,000	150,000	300,000	66.67%
Galley Trade with Alexandria and Beirut: maximum	550,000	190,000	360,000	65.45%
Cog Trade in Syrian Cotton: minimum	130,000	67,500	62,500	48.08%
Cog Trade in Syrian Cotton: maximum	180,000	83,750	96,250	53.47%
Total Trade with Levant: minimum	580,000	217,500	362,500	62.50%
Total Trade with Levant: maximum	730,000	273,750	456,250	62.50%
Estimated Mean Values Of Levant Trade	655,000	245,625	409,375	62.50%

Sources: see the sources cited in the text

Table 2. **Venetian Precious Metal Exports in the Levant Trade in the 1490s Compared with:**

Outputs of Gold and Silver Coinage in kg from England and the Low Countries in 1490s
Silver Outputs in kg from the South German Silver Mines in the 1490s

	Venetian Precious Metal Exports: Estimated	Gold coinage in kg, A	Silver coinage in kg, B	Silver Mined Output in kg C
Mint Outputs of England and the Low Countries in kg fine metal		753.559	7,836.850	
South-German Mining Outputs				25,759.200
		Venetian Bullion Exports as % of A	Venetian Bullion Exports as % of A	Venetian Bullion Exports as % of A
Venetian bullion exports as gold				
- minimum	1,285.06	170.53%		
- maximum	1,617.41	214.64%		
- means	1,451.23	192.58%		
Venetian bullion exports as silver				
- minimum	14,135.69		180.37%	54.88%
- maximum	17,791.47		227.02%	69.07%
- means	15,963.58		203.70%	61.97%

Sources: see the sources cited in the text

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Table 3. **Silver Outputs from the Major South German-Central European Mines in kilograms of fine metal, in quinquennial means: 1471-75 to 1546-50**

Years	SAXONY Est. Total	THURINGIA Est. Total	BOHEMIA Joachimsthal	BOHEMIA Kutna Hora	BOHEMIA Kasperska Hora	SLOVAKIA Fugger Thurzo kg	HUNGARY Nagybanya Kormocbanya	TYROL: Schwaz	TOTAL Estimated
	in kg	in kg	in kg	in kg	in kg	in kg	in kg	in kg	in kg
1471-75	4,360.94			4,500.0				4,112.50	12,973.44
1476-80	10,317.46			4,250.0				7,354.00	21,921.46
1481-85	3,743.30			4,000.0			1,800.0	9,745.80	19,289.10
1486-90	2,770.04			3,750.0			3,523.0	12,751.00	22,794.04
1491-95	3,757.33			3,500.0		1,957.12	3,523.0	12,422.75	25,160.21
1496-00	4,641.69			3,250.0		1,957.12	3,795.9	12,094.50	25,739.17
1501-05	8,979.23			3,000.0		2,870.47	4,068.7	11,766.25	30,684.65
1506-10	7,416.41	4,626.19		2,750.0		3,990.76	4,341.6	11,438.00	34,562.92
1511-15	6,925.10	5,713.42		2,500.0		3,632.11	4,614.4	11,109.75	34,494.81
1516-20	5,189.14	6,079.43	3,970.00	2,250.0		1,983.07	4,887.3	10,781.50	35,140.43
1521-25	3,701.18	6,301.73	9,703.24	2,000.0		2,486.46	5,160.1	10,453.25	39,806.00
1526-30	3,425.12	7,889.16	13,795.32	2,000.0		2,269.15	5,433.0	10,125.00	44,936.74
1531-35	6,663.07	6,300.90	16,554.81	2,000.0		2,269.15	5,433.0	10,125.00	49,345.92
1536-40	14,973.18	5,734.07	13,248.01	3,947.0		2,243.58	5,433.0	10,125.00	55,703.84
1541-45	7,739.26	6,144.00	10,936.85	3,997.0		2,141.55	5,433.0	9,963.49	46,355.16
1546-50	4,131.66	6,576.20	10,936.85	700.0		2,141.55	5,433.0	9,963.49	39,882.76

Sources:
S. Ćirković, *The Production of Gold, Silver, and Copper in the Central Parts of the Balkans from the 13th to the 16th Century*, in *Precious Metals in the Age of Expansion*, ed. H. Kellenbenz, Stuttgart 1981, pp. 41-69; J. Janáček, *L'argent tchèque et la Méditerranée, XIVe-XVe siècles*, in *Mélanges en l'honneur de Fernand Braudel: Histoire économique du monde méditerranéen, 1450 -1650*, ed. E. Labrousse, Toulouse 1973, pp. 245-261; H. Kellenbenz, *Europäisches Kupfer, Ende 15. bis Mitte 17. Jahrhundert: Ergebenisse eines Kolloquiums*, in *Schwerpunkte der Kupferpro-duktion und des Kupferhandels in Europa*, ed. Idem, Cologne 1977, pp. 290-351; Idem, *Production and Trade of Gold, Silver, Copper, and Lead from 1450 to 1750*, in *Precious Metals in the Age of Expansion*, ed. Idem, Stuttgart 1981, pp. 307-361; A. Laube, *Studien über den erz-birgischen Silberbergbau von 1470-1546*, Leipzig 1974; J.U. Nef, *Silver Production*, cit., pp. 575-579; O. Paulinyi, *The Crown Monopoly of the Refining Metallurgy of Precious Metals and the Technology of the Cameral Refineries in Hungary and Transylvania in the Period of*

Advanced and Late Feudalism (1325-1700), in *Precious Metals in the Age of Expansion*, ed. H. KELLENBENZ, Stuttgart 1981, pp. 27-39; G. SCHENK, Über die Anfänge des Silberbergbaues von St. Joachimsthal, in „Der Anschnitt“, 19, 1967, and 20, 1968; J. VLACHOVIC, *Slovak Copper Boom in World Markets of the Sixteenth and in the First Quarter of the Seventeenth Centuries*, in „Studia historica slovaca“, 1, 1963, pp. 63-95; E. WESTERMANN, *Das Eislebener Garkupfer und seine Bedeutung für den europäischen Kupfermarkt, 1460-1560*, Vienna 191); IDEM, Die Bedeutung des Thüringer Saigerhandels für den mitteleuropäischen Handel an der Wende vom 15. zum 16. Jahrhundert, in „Jahrbuch für die Geschichte Mittel- und Ostdeutschlands“, 21, 1972, pp. 68-92. [W. BERGES, H. HERZFELD, H. SKRZYPCZAK eds.]; IDEM, *Tendencies in the European Copper Market in the 15th and 16th Centuries*, in *Precious Metals in the Age of Expansion*, ed. IDEM, Stuttgart 1981, pp. 79-86; IDEM, *Communication (with graphs)* to the 8th International Economic History Congress, Section C, Budapest 1982; IDEM, *Die Unternehmungsform der Saigerhandelsgesellschaft und ihre Bedeutung für den oberdeutschen Frühkapitalismus: Forschungs-stand und-aufgaben*, in *L'impresa industria, commercio, banca secoli XIII-XVIII*, ed. S. CAVACIOCCHI, Firenze 1991 (Istituto internazionale di storia economic 'F. Datini' Prato, series II, Atti delle 'Settimane di Studi' e altri Convegni, 22), pp. 577-586; IDEM, *Über Wirkungen des europäischen Ausgriffs nach Übersee auf den europäischen Silber- under Kupfermarkt des 16. Jahrhunderts*, in *Columbus: Tradition und Neuerung*, ed. A. REESE, Idstein 1992 (Beiträge aus dem Fachbereich IV (Sozialwissenschaften) der Pädagogischen Hochschule Heidelberg, 5), pp. 52-69.

Table 4 . Central European Copper Production and Exports: in Kilograms of Fine Copper with exports to Venice and Antwerp, in quinquennial means: 1491-95 to 1536-40

	Total Ouputs Estimated in kg	Exports: Total kg	To Venice kg	To Venice Percent	To Antwerp kg	To Antwerp Percent
1491-95	1,980,746					
1496-00	2,704,948	1,390,392.3	446,742.2	32.13%	72,545.1	5.22%
1501-05	3,041,820	1,403,347.5	409,357.8	29.17%	453,686.4	32.33%
1506-10	4,770,333	1,627,847.0	184,642.0	11.34%	819,753.4	50.36%
1511-15	5,654,047	1,659,584.9	60,358.6	3.64%	968,521.4	58.36%
1516-20	5,203,097	1,388,953.7	29,544.6	2.13%	606,520.0	43.67%
1521-25	5,341,702	1,434,963.1	66,809.2	4.66%	488,633.1	34.05%
1526-30	5,275,248	1,062,740.6	54,876.6	5.16%	625,457.9	58.85%
1531-35	4,628,886	1,008,644.5	111,652.6	11.07%	543,443.9	53.88%
1536-40	4,336,708	1,207,783.7	150,544.0	12.46%	593,242.8	49.12%

Sources: H. VAN DER WEE, *Growth of the Antwerp Market*, cit., 1, *Statistics*, Appendix 44, pp. 522-523.

Table 5. **Venetian Woollen Cloth Production, 1516-1723, in quinquennial means**

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

Sources:
W. PANCIERA, *L'Arte matrice*, cit., 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 know series of statistics on Venetian woollen cloth production, in D. SELLA, *Rise and Fall of the Venetian Woollen Industry*, cit. Unfortunately, I found it necessary to correct his statistics, from the original archival document, for the following four years: 1521, 1618, 1639, 1662.

Table 6 . **Exports of Silver to Asia by the Dutch and English East India Companies, in kilograms of fine silver, in decennial means, 1660-69 to 1710-19**

Decade	Dutch East India Co. kg of silver	British East India Co. kg of silver	Total Silver Shipments kg of silver
1660-69	11,563.1	5,729.6	17,292.7
1670-79	11,854.6	11,364.0	23,218.6
1680-89	18,847.0	29,276.0	48,123.0
1690-99	27,720.9	18,179.0	45,899.9
1700-09	37,392.9	36,294.3	73,687.2
1710-19	37,108.1	41,133.6	78241.7

Sources: F.S. GAASTRA, *The Exports of Precious Metal*, cit., pp. 447-476; K.N. CHAUDHURI, *Treasure and Trade Balances*, cit., pp. 497-498.

Table 7 . **Export Statistics of the English East India Company: Exports of Precious Metals in kilograms and Pounds Sterling of England, in decennial means: 1660-69 to 1710-19**

Decades	Silver kg	Silver value in £ sterling	Gold kg	Gold Value in £ sterling	Total Treasure in £ sterling	Silver as percent	Gold as percent
1660-69	5,729.600	51,445.568	175.140	22,576.832	74,022.400	69.50%	30.50%
1670-79	11,364.000	102,063.850	1,015.300	132,027.550	234,091.400	43.60%	56.40%
1680-89	29,276.000	262,839.775	929.070	120,867.926	383,707.700	68.50%	31.50%
1690-99	18,179.000	163,230.172	24.690	3,331.228	166,561.400	98.00%	2.00%
1700-09	36,294.300	325,887.606	79.540	11,121.294	337,008.900	96.70%	3.30%
1710-19	41,133.600	369,189.591	14.970	2,228.509	371,418.100	99.40%	0.60%
TOTAL	141,976.500	1,274,656.563	2,238.710	292,153.337	1,566,809.900	81.35%	18.65%

Source: K.N. CHAUDHURI, *Treasure and Trade Balances*, cit., Table 1, pp. 497-498.

Table 8. **The English East India Company's Export Trade to India in Treasure and Merchandise**
in pounds sterling: in decennial means, 1660-69 to 1710-19

Decades	Total Treasure in £ sterling	Merchandise in £ sterling	Total Value in £ sterling	Treasure percent	Merchandise Percent
1660-69	74,022.400	41,085.200	115,107.600	64.31%	35.69%
1670-79	234,091.400	89,990.800	324,082.200	72.23%	27.77%
1680-89	383,707.700	56,170.200	439,877.900	87.23%	12.77%
1690-99	166,561.400	72,065.200	238,626.600	69.80%	30.20%
1700-09	337,008.900	60,876.500	397,885.400	84.70%	15.30%
1710-19	371,418.100	97,771.300	469,189.400	79.16%	20.84%

Source: Calculated from: K.N. CHAUDHURI, *Treasure and Trade Balances*, cit., Table 1, pp. 497-498.

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Giovedì 4 maggio – TRASMISSIONI ISTITUZIONALI E TECNOLOGICHE /
EVOLUZIONE COMPARATIVA DELLE ISTITUZIONI E DELLE TECNICHE:
RECIPROCHE INFLUENZE E INTERAZIONI

Venerdì 15 aprile – IDEE, REGOLE E PERCEZIONI ECONOMICHE