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**IDENTIFYING ROOT CAUSES OF ECONOMIC DEVELOPMENT IN THE MIDDLE EAST:
STRUCTURAL CHANGE, DIVISION OF LABOUR AND SMITHIAN GROWTH THEORY**

Abstract

Adam Smith recognized division of labour as an indicator of economic development and growth, and a leading factor in higher labour productivity with additional dimensions in the expansion of the markets, urbanization, trade, and human capital. I identify an episode of Smithian Growth in the Middle East where division of labour occurred early and remained in full display during the entire medieval period and compare it to the transition to economic growth in pre-modern Europe beginning in the 17th century. I provide quantitative and qualitative evidence to substantiate the prevalence of division of labour and occupational specialization in the manufacturing and in the service sector and demonstrate it using evidence from the textile industry. Division of labour and occupational specialization is then linked to the extension of the markets and aggregate demand through exploration of human capital, urbanization, and commercialization.

A. Division of labour and Smithian Growth

Adam Smith (1723-1790) was the first to suggest a link between division of labour and the origins of economic growth: “*Subdividing production into separate tasks and letting different producers specialize in each will improve the efficiency of all*” (*The Wealth of Nations, 1776*). He observed that the process of shifting labour force from the rural occupation to urban ones was accompanied by specialization of each trade and improved the productivity of labour, lowering production costs. However, he also linked it to demand, since division of labour is conditioned by “the extent of the markets”, the growth of the aggregate demand for goods and services, itself a function of population size, income level, trade efficiency and social order and law. That entire construct is known as ‘Smithian Growth Theory’ and used in reference to various cases analysing economic

growth. ¹Accounting for the role of human capital in the growth process, Smithian Growth Theory is frequently associated with ‘Schumpeterian growth’. ² Like Smithian Growth, Schumpeterian Growth shares postulations about the role of division of labour, but highlights improvements in the stock of human knowledge and technological progress in it, and links knowledge to capital investments in technological innovation. ³

Economic historians of Ancient and medieval societies do not usually refer to ‘Smithian Growth’ when debating whether or not economic development occurred, and with good reason - they could not demonstrate the existence of division of labour as defined. Indeed, claiming Smithian Growth in societies who lived on subsistence level or slightly better than subsistence, is tricky. Even as the investigation improves and findings suggest comparative levels in terms of real wages and standards of living, at no time could quantitative evidence be offered to point to division of labour before the 16th century. ⁴ Using the methodology known as Occupational Classification in Economic Sectors, Carlo Cipolla showed deepening specialization in sectors in evidence dating from late 16th century European cities.⁵ He approximated and supplemented it with urbanization rates which were rising in Italy, England and Holland between 1500 and 1600, but was unable to find earlier evidence.⁶ Gregory Clark and al. provided list of occupations in sectors for the 16th and 17th centuries England, in a study of farm workers. ⁷ They show that more than a third of rural workers were engaged in nonfarm activities in the years before 1700, but again not the urban

¹ Haim Barkai, “A formal outline of a Smithian Growth model,” *The Quarterly Journal of Economics*, 83/1 (1969), pp. 369-414.

² Marios Zachariadis, “R&D, innovation, technological progress, A test of the Schumpeterian framework without scale effects,” *The Canadian journal of economics/Revue Canadienne d’Économique*, 36/3(2003), pp. 566-586. Joel Mokyr, *The Lever of Riches. Technological Creativity and Economic Progress*. Oxford University Press, Oxford and New York, 1990. Barkei highlights the dynamism in the interaction between labour and technology.

³ Mokyr, *The lever of riches*, pp. 4-5.

⁴ *Living standards in the past*, eds. R. Allen, T. Bengtsson, M. Dribe, (Oxford, Oxford university press, 2005), pp.1-6.

⁵ Carlo Cipolla, *Before the industrial revolution. European Society and Economy, 1000-1700*. (Norton & Co. New York and London, 1980), pp. 76-78 and **Table 2-7**, p. 77.

⁶ K. G. Persson and P. Sharp, *An Economic History of Europe. Knowledge, Institutions and Growth, 600 to the present* (Cambridge University Press, 2015), p. 41. Figure 2.3 Urbanization in Europe and China: urban population as a percentage of total population

⁷ Gregory Clark, Joseph Cummins and Brock Smith, “Malthus, Wages, and Preindustrial Growth,” *The Journal of Economic History*, 72/ 2 (2012): 364-392,

division of labour favoured by Adam Smith.⁸ Persson and Sharp, who recently argued for early medieval economic revival in Europe, earlier than previously thought, point to economic change in late medieval Europe, utilizing numbers of occupations in several European cities, beginning in 1300.⁹ Kelly returned to Adam Smith's China case, as being a society which experienced early division of labour, and supported Smithian Growth there by pointing to the impact of a new river transportation system.¹⁰ It was the building of a system of water canals which brought together small and less developed production systems into unified trade network. By doing so, Kelly supplied the Smithian requirement of the 'extension of the markets' and aggregate demand.¹¹ Adam Smith's notion of division of labour as limited by the extent of the markets, may have been inspired by England's 18th century commercial development, a product of an earlier phase of increase in commercialization and international trade.¹² Yet Kelly argued that Chinese division of labour occurred in the agrarian sector, as the new transport system allowed for rice shipments to move efficiently to the markets.

Smithian Growth Theory remains close to the economic genesis of Europe in the later Middle Ages through the economic powers initially missing but then appearing. For instance, unstable supply of money hindered the volume of trade; markets were imperfect and information flowed slowly and was distorted on the way.¹³ The Dark Ages in Europe were also characterized by political disorder which harmed market exchange, making it costly and risky. Persson and Sharpe attributed a major role to the division of labour. European society in the post-Roman period relied on thin basis of knowledge and human capital, and division of labour was crude and extracted from experience, 'domestic knowledge', which constrained production.¹⁴ Earlier gains

⁸ Clark and al." Malthus," 388-389. Appendix: Assignment of occupations to sectors

⁹ Persson and Sharp, *An Economic History of Europe*, p. 40. In Table 2.1. Increasing division of labour as measured by number of occupations, pp.25-46. Bruce M. S. Campbell, *The great transition. Climate disease and society in the late –medieval world*, (Cambridge university press, 2016), pp. 125-126.

¹⁰ Morgan Kelly, "The dynamics of Smithian Growth," *The Quarterly Journal of Economics*, (1997), pp. 939-964.

¹¹ Kelly, "The dynamics," p. 960.

¹² R. Britnell and B. M. S. Campbell, eds. *A commercialising economy. England 1086 to c. 1300* (Manchester, Manchester University Press, 1995). R. Britnell, *Markets, trade and economic development in England and Europe, 1050-1550* (Ashgate Variorum, 2009)

¹³ Persson and Sharp, *An Economic History*, pp. 26-28.

¹⁴ Persson and Sharp, *An Economic History*. p. 30

in Europe were made from repetition or practice, ‘economies of practice’ for short, and learning by doing, allowing producers to specialize.¹⁵ By the 9th century division of labour was an extension of useful knowledge and artisans promoting technological change. Increase in population levels, monetary circulation, transport and trade routes, urbanization, production and technology, changed the economic environment and allowed specialization to trigger a decrease in opportunity costs and increase output per worker. Once achieved, skills which helped to grow through division of labour continued to improve but at a decreasing rate in Europe’s rebounding from the ‘dark ages’. At the same time, knowledge accumulation stimulated by theoretical inquiry occupies a central place in Europe’s version of Smithian Growth Theory; Not only does it explain the role of technological innovation in division of labour, it shows how fall in demand limits accumulated knowledge leading to economic decline.

I have used the same methodology for the Islamic case with more than adequate results for understanding economic development. Not much is known and understood and until recently the main criterion for economic growth, namely rise of living standards and their maintenance in the long-run could not be substantiated. A recent study by Pamuk and Shatzmiller has changed our concept of living standards in the medieval Middle East by the study of wages, and while more evidence is always needed, our estimates of wages and purchasing power strongly suggest higher living standards in the cities.¹⁶ Using numeric data from the Arabic sources it was possible to build a consumer price index for the 8th -15th centuries, and calculate the purchasing power of wages in terms of basic goods. The paper demonstrated that that real wages of unskilled workers in medieval Iraq and Egypt ranged between 2 to 3 times the subsistence level for most of the medieval period, a stretch of 700 years. When compared to Ancient Mesopotamia,¹⁷ Rome,¹⁸ Byzantium,¹⁹

¹⁵ Persson and Sharp, *An Economic History*, p. 26.

¹⁶ Sevket Pamuk and Maya Shatzmiller, “Plagues, Wages, and Economic Change in the Islamic Middle East, 700-1500,” *The Journal of Economic History*, Vol. 74, NO. 1 (March 2014), pp. 196-229.

¹⁷ P. Földvári and B. van Leeuwen, “Comparing Per Capita Income in the Hellenistic World: The Case of Mesopotamia.” *Review of Income and Wealth* 58, no. 3 (2012): 550–68

¹⁸ W. Scheidel and S. Friesen, “The Size of the Economy and the Distribution of Income in the Roman Empire.” *Journal of Roman Studies* 99, no. 3 (2009): 61–91; W. Scheidel, “Real Wages in Early Economies: Evidence for Living Standards from 1800 BC to 1300 CE,” *Journal of the Economic and Social History of the Orient* 52, no. 3 (2010): 425–62.

¹⁹ B. Milanovic, “An Estimate of Average Income and Inequality in Byzantium Around the Year 1000,” *Review of Income and Wealth* 53, no. 3 (2006): 449–70.

medieval Europe,²⁰ unskilled workers in the Middle East most likely enjoyed the highest standards of living amid contemporary societies.²¹ These are significant findings, with important consequences to our understanding of economic performance and the economic history of the medieval Middle East.

The high wages in the Middle East were linked in the paper to the tremendous decline in population levels after the Justinian Plague and recurrences, 541-750, and the rising demand for labour. The findings presented in the current paper go beyond the initial demographic shock in the Middle East and help explain why wages remained high even after population levels began to recover. Smithian Growth Theory is also supported by rising literacy rates and the use of books, the basis for technological innovation in Europe and much is explained by the improvements in the quality of human capital and transformations in knowledge accumulation and transmission.²² In the case of the Middle East the increase in human capital was strongly supported by developments in literacy tools, mostly by the invention of the Arabic paper.²³ The adoption of paper made of linen rags, changed writing and reading practices forever, and directly affected levels of literacy and numeracy in society, helped move information from a stage of oral preservation to written texts, and affected the ways knowledge was stored and technological data transmitted.

My next project will be to investigate the infra structures of knowledge accumulation, transmission and literacy, human capital formation and their impact on economic performance but

²⁰ J. Goldstone, “Efflorescences and Economic Growth in World History: Rethinking the ‘Rise of the West’ and the Industrial Revolution,” *Journal of World History* 13, no. 2 (2002): 323–89; K. G. Persson and P. Sharp, *An Economic History of Europe*; D. C. North, *Structure and Change in Economic History* (New York, NY, and London, UK: Norton & Co., 1981).

²¹ J. Bolt and J. L. van Zanden. “The Maddison Project: Collaborative Research on Historical National Accounts,” *The Economic History Review* 67, no. 3 (2014): 627–51.

²² Jaime Reis, “Economic growth, human capital formation and consumption in Western Europe before 1800,” *Living standards in the Past. New perspectives on well-being in Asia and Europe*, eds. R. C., T. Bengtsson M. Dribe (Oxford, Oxford University Press, 2005), pp. 195-225. Jan de Vries, “Between purchasing power and the world of goods: understanding the household economy in early modern Europe,” *Consumption and the World of Goods*. Eds. John Brewer and Roy Porter, (Rutledge, London and New York, 1993), pp. 85-132. Sheilagh Ogilvie, “Consumption, Social Capital, and the “Industrious Revolution” in Early Modern Germany,” *Journal of Economic History*, 70/2 (2010): 287-325. Mokyr, *Lever*, 5.

²³ Maya Shatzmiller, “The adoption of paper in the Middle East, 700-1300 AD,” *The Journal of the Economic and Social History of the Orient*, 61/3(2018), 461-490.

until a comprehensive exploration of the Schumpeterian growth patterns in the Middle East case take place, I use qualitative and quantitative evidence to demonstrate division of labour and specialization in the medieval Islamic economy.²⁴ A large database of occupational tradenames collected from numerous Arabic sources made it possible to apply the methodology of Occupational Classification in Sectors of Employment, and determine degrees of specialization in each industrial branch.²⁵ The statistical work revealed significant division of labour in the urban centers, one which persisted during the entire medieval period, albeit with slight decline in the later Middle Ages. The findings alerted me to the existence of factors and indicators of Smithian Growth in the Islamic Middle East, such as the expansion of the markets, urbanization, transportation and capital infusion. The rest of the essay is devoted to exploring them as well as adding insights to Smithian Growth from the Islamic case.

B. Division of labour in the Islamic city

Occupational Classification consists of grouping and ranking jobs in various sectors in the economy and measuring the degree of division of labour.²⁶ Using an extensive number of Arabic sources from Egypt, Iraq, Syria, Muslim Spain, and North Africa, I have conducted a statistical analysis of trades in various Islamic cities, including capital cities. It was possible to generate a new database of Arabic tradenames and divide them into two chronological segments, 8th-11th and 12th to 15th centuries. The statistical results are presented in **Table 1**. We can now make observations about the degree of division of labour and also, by extrapolation, the size of the labour force in each industry under the assumption that more division of labour represents more artisans. Persson and Sharp have done their survey of the Middle East by counting occupations in the Bible-

²⁴ Maya Shatzmiller, *An early knowledge economy. Human capital and economic progress in the Islamic Middle East*. In preparation.

²⁵ Maya Shatzmiller, *Labour in the medieval Islamic world*, (Leiden, E. J. Brill, 1994) . The database is accessible online:

https://medievalislamicconomy.uwo.ca/cost_of_living/occupations.html under Dataset Occupational Classification in Sectors of Employment Sources.

²⁶ Shatzmiller, *Labour*, for discussion of the methodology, pp. 11-33, and detailed analysis, 169-323. Maya Shatzmiller, entry “Artisans. Pre-1500” in the *Encyclopaedia of Islam* 3rd edition, 2012.

one may suggest that the Arabic sources provide better documentation.²⁷

TABLE 1

UNIQUE (TOTAL CASES) OF OCCUPATIONS IN SECTORS OF EMPLOYMENT						
Sector of Employment	Number of Occupations 8 th - 11 th century	Unique Number of Occupations 12 th - 15 th century	Percentage Change			
Extractive	49(63)	29(35)	-40%			
Manufacturing	432(697)	406(679)	-6%			
Service	522(736)	883(1175)	+69%			

Source: Shatzmiller, *Labour*, p. 170.

The spread of specialized occupations suggests several conclusions. First, that the ‘unique’ occupations in **Table 1** of a single trade name or an occupation, represents extensive division of labour, second, that the number of times each occupation is cited in all sources is indicative of its wide spread. Since the sources derive from various cities in the Islamic Middle East and North Africa, an observation of general specialization in the urban sectors, is sustained. Specialization in the primary sector was limited and further declined in the later Middle Ages. Mining occupations, for reasons of the mining boom expanded but then contracted. Andrew Watson has laid the foundations to the agrarian knowledge’s link to productivity through the existence of agrarian manuals.²⁸

In comparison division of labour in the Manufacturing and the Service sectors was considerable. The numerical representation of food processing occupations, namely tradenames producing ingredients and making dishes and processed foods, show that they occupied the largest share of the labour force, 21% of the city producers. They were followed by occupations in the textile industry, 19% of the total and the metal industry, 16%. As we move from the early period to the later, between 12th to the 15th centuries, almost all sectors and most types of

²⁷ Persson and Sharp, *An Economic History of Europe*, p. 40. List of the sources https://medievalislamicconomy.uwo.ca/cost_of_living/occupations.html

²⁸ More studies of technological improvements are required. Andrew Watson, *Agricultural Innovation in the early Islamic world*, (Cambridge, Cambridge University Press, 1983).

occupations show a drop in numbers presented in **Table 2**. The number of occupations by type in the manufacturing sector followed the raw material used and the nature of the activities undertaken in processing it. The numbers indicate that contraction occurred in almost every type of manufacturing occupations over the second term, in the period 12th-15th centuries, except for textile, wicker, wood and general occupations.

The results are not at odds with precedence. By the end of the 11th century the expansion in specialization and division of labour slowed but was slight in the degree of specialization. As predicted by the Smithian Growth Theory increase in division of labour would be difficult to maintain. Persson and Sharp suggested that decline in division of labour came as a result of population decrease and other factors such as political instability.²⁹ The availability of written sources stands in strong distinction to the scarcity of written sources in Europe, where they began to flow in the 13th century. In the Islamic case the decline was not universal but selective with some branches actually increasing their specialization. The Arabic literary texts from the early medieval centuries, is a strong indication of the presence of literacy at this early stage

TABLE 2

NUMBER OF UNIQUE OCCUPATIONS (CASES) MANUFACTURING SECTOR ACCORDING TO TYPE

8th-11th, 12th-15th C.

Type	Number of Unique Occupations (Cases)	
	8 th -11 th Century	12 th -15 th Century
Chemical	16 (29)	11 (26)
Construction	50 (64)	39 (58)
Food Processing	88 (156)	86 (170)
Glass	13 (20)	8 (13)
Leather	39 (72)	38 (64)
Metal	68 (111)	63 (100)
Paper	4 (8)	3 (9)
Pottery	17 (26)	9 (10)
Textile	80 (128)	90 (145)
Wicker	20 (26)	17 (22)
Wood	32 (50)	35 (53)
General	5 (6)	7 (9)

²⁹ Persson and Sharp, *An Economic History*, 32-33.

By establishing the numerical relationship between the types of industries, Occupational Classification methodology assists us in estimating the percentage of the labour force employed in each. Carlo Cipolla used the methodology to determine the distribution of the ‘economically active’ urban labour force’ in 15th-17th centuries European cities. He concluded that the labour force employed in the food, construction and textile types accounted for 55 to 65 percent of the urban labour force in 17th century Europe.³⁰ The food, textile and construction in the Islamic cities amounted to 51 percent of the labour force.

C. Division of Labour in the Manufacturing sector and the textile industry

The textile industry provides evidence for the case I am making. Not only it demonstrates a wide degree evidence of specialization and division of labour, textile items prices may be used to demonstrate aggregate demand and the expansion of the markets.³¹ The list of tradenames compiled from the Arabic sources contains 80 different occupations related to textile manufacturing and may be found in **Appendix 1** of this paper. In comparison, evidence from 16th-17th centuries England textile related occupations shows 90 occupations which included leather making occupations like shoe making.³² Our classification divided tradenames according to the raw material used, so distinguished between textile and leather, with the leather making tradenames providing 39 separate occupations. Other reasons for the differences in numerical order

³⁰ Carlo Cipolla, *Before the industrial revolution*, pp. 76-78.

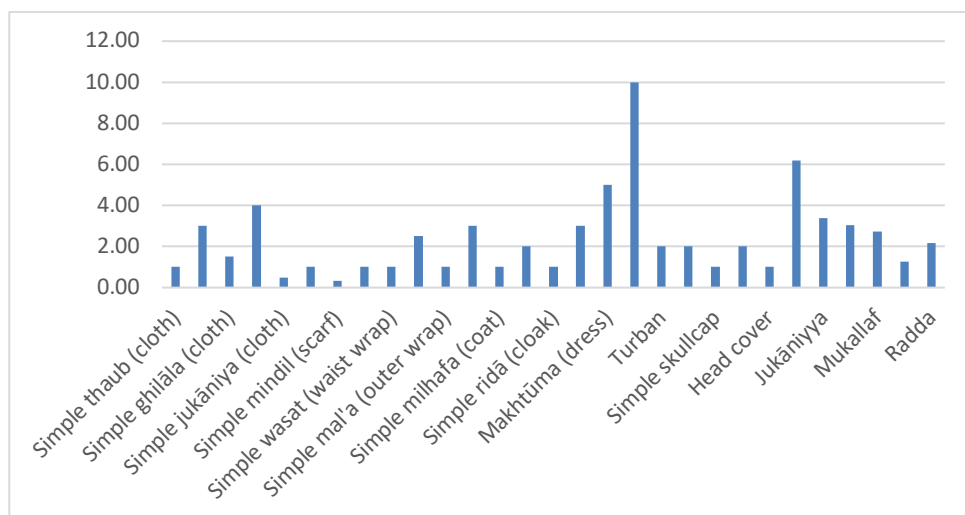
³¹ For similar links to the textile production and growth in medieval England, see Campbell, *The great transition*, pp. 126-130. To avoid repetition of the details of the Textile evidence I send the reader to previously published material on the primary sources and the literary qualitative evidence of growth in textile, Shatzmiller *Labour*, pp. 118-123 and pp. 240-249. On the Islamic textile industry see among other, Maurice Lombard, *Les Textiles dans le monde musulman du VIIe au XIIe siècle*. (Paris, Edition de l'EHESS, 1978); Robert B. Serjeant, *Material for a History of Islamic Textiles up to the Mongol Conquest*, (Beirut. 1972), Originally published in *Ars Islamica* 9-14, (1942-1951).

³² Gregory Clark, Joseph Cummins, and Brock Smith, “Malthus, Wages, and Preindustrial Growth,” *The Journal of Economic History*, Vol. 72, No 2, June 2012, pp. 364-392 with *Appendix* on pp. 388-389 for details. The list from England also contains makers of leather clothing items not included in our list, which used the raw material as classification criterion. Obviously adding leather-clothing makers would have increased our database even further.

may be related to the differences in the environments studied, the Islamic one being the cities, the one from England, farm workers still on the farm. Also the urban environment meant that the list from the Islamic cities included sellers of textiles, reflecting a mature textile manufacturing apparatus. The extensive specialization in textile occupations is matched by the range of garments' prices found in the *Genizah* documents. I have used 2 sources to compile a price list provided in **Table 3**, one of regular garments compiled by Ashtor from *Geniza* sources,³³ the other of expensive garments derived from the bridals' trousseau lists by Stillman from the same provenance.³⁴ The combined lists produced a database of hundreds of items of different garments, from which 23 items were selected to represent average prices.

CHART 1

AVERAGE PRICES OF CLOTHING ITEMS, EGYPT, 11th-13th CENTURIES



Sources : Ashtor, 1969; Stillman, 1972.

³³ Eliyahu Ashtor, *Histoire des prix et des salaires dans l'Orient medieval*, (Paris, SEVPEN 1969), pp. 152-174.

³⁴ Yedida Stillman, *Female Attire in Medieval Egypt According to the trousseau lists and cognate material from the Cairo Genizah*. Unpublished Dissertation the University of Pennsylvania, Philadelphia, 1972.

How was pricing of textile items determined? Prices were determined by a range of market factors, price of raw materials and of price of labour. The price and quality of the raw material used include the prices of the pigments and dyes used to stain it. The garments that were made of linen, cotton and wool used raw material produced in Egypt to which we need to add the price of transportation. The price of items made of brocade, silk, decorated with embroidery, gilded, bordered with range of colors including yellow, blue, ruby, reddish violet, sandy and wax color for example, may have used pigments imported from over distance, augmenting the transportation price. Such items could be sold for tens of dinars as compared to the same item but of cheaper components. For instance, a *thawb*, a staple clothing item, made of cotton, linen, wool, silk or combination of two, was a staple item, indispensable and regularly and commonly consumed, had the standard price of one dinar.³⁵ The price of the two most common items, “*thawb*” and “*jukaniyya*”, a staple outfit for men and women, ranged between 1-2 dinars, but a price of 6.20 dinars was paid for a luxurious item. As elsewhere, the price of expensive garments indicates to us that luxurious expensive garments became a depository of wealth.

The quality and time of work involved in producing the garment or cloth included weaving and sewing, embroidery or gilding, and the elaborate decorations on the borders. Yet the price of labour was influenced by the gender sensitive division of labour that developed after the entry of women into the labour force. At first women drove specialization by taking over multitude tasks in the textile industry, while later women exercised a monopoly over spinning of all threads, wool, cotton, flax, silk, and over the manufacturing techniques of some of the fancy clothing items, like silk dyeing and sewing. An efficient gender-based division of labor emerged, as women exercised a monopoly over spinning of all threads: wool, cotton, flax, and silk. Women performed specialized tasks such as silk dyeing and sewing of fancy garments. It also changed labour organization in the cities. An output system was put in place to accommodate spinners and seamstresses working at home. Networks of male and female brokers appeared, distributing

³⁵ S. D. Goitein, *A Mediterranean Society*. Volume I: *Economic Foundations*, (Los-Angeles, University of California Press, 1967), p. 229. Ashtor, *Prix et salaires*, p. 173.

threads, cloth, and raw material, collecting the finished items and disbursing payment.³⁶

Female wages, while lower than those of men affected economic development in other ways too. Equally significant was the accumulation of wage income in women's hands which created an upsurge in income distribution to women and increased household income.³⁷ As female wage earners garnered income in addition to other capital transfers coming to them at marriage or through inheritance, they began to play a considerable role in the household's finances and contributed to the aggregation of consumers in the markets. The growing purchasing power of wages affected the level and structure of demand. There is evidence as early as the 9th century that cultivation of textile plants and expansion of the textile industry responded to a rise in demand for luxury items or in economic jargon, 'income elastic' items that people earning above subsistence level and not only in Baghdad and Fustat.³⁸ The commercialization of the industry followed the changes in the 9th century to which the weaving contracts signed between the weavers in the countryside and the merchants of the Fayyum Egypt, alerted us.³⁹ Additional stimulus was provided by increases in textile plants cultivation, which permitted the reorganization of the linen production geared for export markets.

The rise of demand for cloth and garments was not the only factor in the expansion of the markets. The expansion of the markets was fed by growing manufacturing capacities in the provinces. For instance, the first Abbasid list of taxes from 785 contains various garments and carpets sent from the provinces to the capital as share of taxes, a sign of a lively textile industry in the provinces.⁴⁰ "300 checkered garments from Sijistan, 27,000 garments from Khurasan, 600

³⁶ Goitein, *Mediterranean Society*, vol. I. 127-130. Shatzmiller, *Labour*, pp. 347-369. Compare England 16th-18th centurie, Craig Muldrew, "'Th'ancient Distaff' and 'Whirling Spindle': measuring the contribution of spinning to household earnings and the national economy in England, 1550-1770," *Economic History Review*, vol. 65/2, 2012, pp. 498-526; Cipolla, *Before*, pp. 72-73

³⁷ Maya Shatzmiller, *Her day in court. Women's property rights in 15th century Granada*, (Harvard university press, 2007)

³⁸ Gladys Frantz-Murphy, "A New Interpretation of the Economic History of Medieval Egypt. The Role of the Textile Industry 254-567/868-1171", *Journal of the Economic and Social History of the Orient*, 24 (1981), pp. 274-297; Richard Bulliet, *Cotton, Climate, and Camels in Early Islamic Iran. A moment in World History*, (New York, Columbia University Press, 2009); Shatzmiller, "The adoption of paper," Compare Cipolla, *Before*, 3-63.

³⁹ Yusuf Rāgib, *Marchands d'Etoffes du Fayyoun au IIIe/IXe siècle d'après leurs archives (actes et lettre*, (Cairo 1982).

⁴⁰ Ibn Khaldun, *The Muqaddimah*, tr. F. Rosenthal, I: 362-63

Tabaristân carpets, 200 robes, 500 garments, 300 napkins, 20 robes from Jilan, 20 embroidered carpets, 20 variegated cloths from Armenia, 120 carpets from Ifriqiya”. While received as taxes the textiles may have been sold in the markets representing both demand and income. The *Genizah* documents show that in the 11th century Egypt’s flax was traded over new commercial arteries, North Africa and Sicily, Syria, and India.⁴¹ New markets inaugurated in response to growing demand with improvements in financial institutions, written contracts, and increase in literacy and numeracy. The countless letters exchanged over the trade routes by the *Genizah* traders, reveal the new dimensions of commercialization of the economy.

To sum up, growth occurred because of changes in various input factors. First, there was an increase in the supply of raw material because of amplified cultivation of textile plants, cotton, and flax. Second, there was increase in demand for fine textiles owing to rising incomes in the early period,⁴² and third, the entry of women and children into textile production, provided for an increase in the size of the labour force. Together these factors, a rise in demand, income elasticity and income distribution, the upsurge in the labour force, expansion of textile plants cultivation and raw material, may be unique and not a sample yet it rationalizes and justifies the claim made here of an intensive expansion of the markets. The extensive division of labour in the service sector will provide additional evidence.

D. Division of labour in the service sector

The division of labour in the service sector revealed by the occupational classification offers more linkages to urbanization, transportation, trade, and human capital that supported division of labour through the extension of the markets.⁴³

TABLE 4
NUMBER OF OCCUPATIONS (CASES) ACCORDING TO TYPE OF SERVICE

⁴¹ R. E Margariti, *Aden and the Indian Ocean Trade. 150 Years in the Life of a Medieval Arabian Port*. (Chapel Hill, University of North Carolina Press, 2008); S. D. Goitein and M. A. Friedman *India Traders of the Middle Ages. Documents from the Cairo Geniza (India Book)*. (Leiden: Brill, 2008).

⁴² Pamuk and Shatzmiller, “Plagues, Wages, and Economic”,

⁴³ Persson and Sharp, *An Economic History*, pp. 28-29, 33.

Type	8 th -11 th , 12 th -15 th Centuries	
	8 th -11 th Century	12 th -15 th Century
Industrial Services	262 (361)	243 (350)
Professional Services	144 (214)	162 (252)
Public Services	127 (161)	481 (573)

Source: Shatzmiller, *Labour*, p. 257

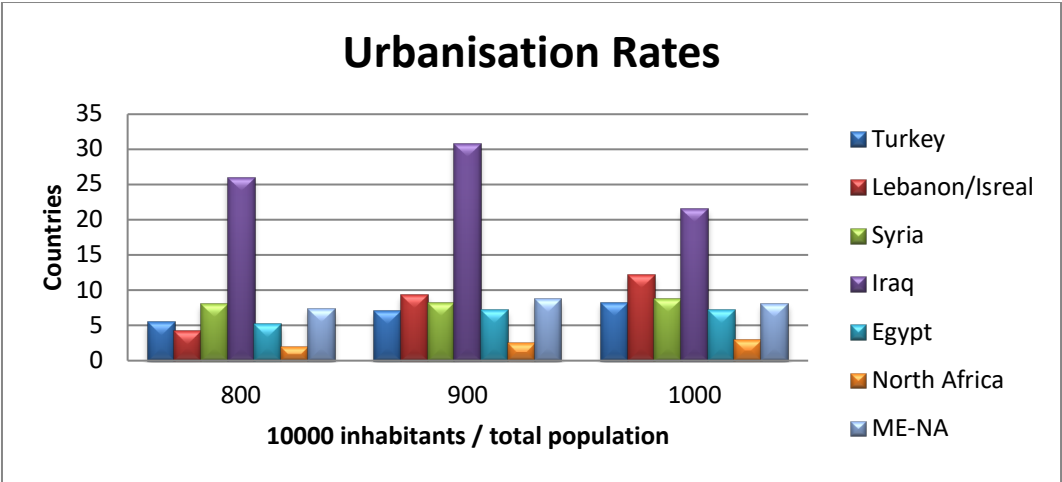
Our database contains 533 unique occupations for the first period and 886 for the second. **Table 4** presents the results of the occupational classification in the service sector in three different categories: Occupations were divided into three types, and then into six branches, each providing a different kind of service. Under the industrial service category 262 occupations were related to commerce and transport, 144 occupations were related to professional services, and 127 in public services representing mostly activities in state institutions. In the second term division of labour increased and its focus changed. Specialization of service occupations was already considerable during the early period in the Middle East, 8th to 11th centuries, and increased further, by 69%, in the second period. The number of unique occupations of industrial services, commerce, and transport declined but unique occupations in professional and, especially in public services, increased, so that their share of the labour force in services increased from 51% in the first period to 66% in the second. The increase in professional and public occupations improved trade and market transactions and administrative services as well as the work of the courts when enforcement was required. All were the results of overall improvements in the quality of human capital.⁴⁴ These For instance, the expansion of national bureaucracies, of the Mamluk regime in Syria and Egypt and the Marinid regime in Morocco. These reflect increase in literate and numerate personnel.

E. Urbanization, overland transport, and capital allocation

Studies of the urbanization patterns in the Middle East determined that urbanization

⁴⁴ For detailed discussion of the distribution of the labour force in the service sector, Shatzmiller, *Labour*, pp. 255-323. There is no room here to expand on the various reasons for this including indicators ranging from literacy and numeracy to manuals and transaction technology.

expanded in the Middle East after the end of the Justinian Plague and the arrival of the Arabs from the Arabian Peninsula. But comparative urbanization rates studied in a recent paper established that Islamic urbanization exceeded urbanization rates in the Roman period and in contemporary Europe, and that cities there were larger than European cities.⁴⁵ The statistical approximation displayed in **Figure 1** demonstrates the case especially for Iraq.⁴⁶ However,



Source: Based on data in Maarten Bosker, Eltjo Buringh and Jan Luiten van Zanden, “From Baghdad to London: Unraveling urban development in Europe, the Middle East, and North Africa, 800-1800”, *The Review of Economics and Statistics*, 95/4(2013), pp. 1418-37.

in addition to the expansion in urbanization in the Middle East, there was also a process of commercialization taking place, demonstrated by market specialization in cities along the trade routes. However, before looking at the evidence there are some caveats that need to be mentioned. Advocates of Smithian Growth Theory and division of labour point out that the greater the intervening distance between towns, or between center and periphery, the smaller will be the trade between them and smaller will be the number of people employed in producing

⁴⁵ Paul Bairoch, *Cities and economic development. From the dawn of history to the present*, tr. by Ch. Braider, (Chicago, Chicago university press, 1988), 370-378. Said Ennahid, *Political economy and settlement systems of medieval northern Morocco*, Bar International series 1059 (Oxford, 2002)

⁴⁶ M Bosker, E. Buringh, J-L. van Zanden, “From Baghdad to London: unraveling urban development in Europe, the Middle East, and North Africa, 800-1800,” *The Review of Economics and Statistics*, 95/4(2013), pp. 1418-1437.

exchangeable goods.⁴⁷ As a result with each town being occupied with producing self-sufficiency items and not benefitting from items produced elsewhere, division of labour will not expand. In the Islamic case the relationship between smaller towns connected by interregional trade routes to the large urban centers in the Middle East shows that these small centers achieved a great degree of specialization in manufacturing. We can use as evidence the genre of Arabic sources known as the ‘Routes and Kingdoms’, *al-masālik wa ’l-mamālik*, that describe the long distance trade routes linking the Empire and its provinces. Al-Muqadassi, a 10th century geographer, recorded the names of towns established along the North-Eastern trade route and carefully noted their production and exports, some second hand but most locally manufactured.⁴⁸ **Appendix 2** provides a sample list of North-Eastern towns and their specialties, an indicator of specialized urban markets, and how they coalesced into a network of trading communities.

The Middle East was also unique in its heavy reliance on overland transportation rather than on maritime shipments. R. S. Lopez commercial revolution vision of the 13th century was centered around maritime transportation and shaped our view of what medieval trade can bring to economic growth.⁴⁹ Overland routes are more expensive, loaded with heavy costs of animals, beasts and their drivers, porters, desert navigators and by the need to cross rivers. Nonetheless, Herman Van der Wee and Theo Peeters have shown that while the 12th, 13th and 16th centuries were indeed periods of global economic expansion, they corresponded to prosperous transcontinental European commerce. The 14th and 15th centuries as well as largely the 17th century, were centuries of intensification of maritime expansion but of economic regression, characterized by retreat, recession or decline of the transcontinental European trade.⁵⁰ Thus a different view of overland transport, and its impact on the ‘extent of the markets’ highlights what is normally taken to be limitation, the overland trade, as an economic driver. The cities living on the Islamic trade experienced the same trend.

Finally, the ultimate condition required for the expansion of the markets was sufficient

⁴⁷ Persson and Sharp, *An economic history*, 35-36.

⁴⁸ Muhammad b. Ahmad Al-Muqadassi, *The best divisions for knowledge of the regions*, tr. B. Collins, (Reading UK, 2001)

⁴⁹ Robert S. Lopez, *The Commercial Revolution of the Middle Ages 950-1350*, (Englewood Cliffs Prentice-Hall, 1971).

⁵⁰ H. Van der Wee and Theo Peeters, “Un modèle de croissance interséculaire du commerce mondial,” *Annales*, É.S.C. 25/1(1970): 101-1126.

monetization and there no medieval economy can compare to the Islamic case.⁵¹ The early efforts by the Islamic administration to monetize the economy beginning with the 7th century first by the Umayyad administration and then by the Abbasids in Baghdad by setting up a unified monetary system was later to be maintained by the successor states in the different provinces. It is a testimony to its efficiency that the monetary system was kept long-term.⁵² Independence from Baghdad permitted each region to mint its own coins, explore the mines within its borders while keeping the initial structures in place. One of the more known episodes of a successful monetary system was that of the Samanids known in the literature due to the Viking dirhams, millions of silver dirhams acquired in trade deals.⁵³ The Viking dirhams were the Samanid dirhams produced in Northeastern Iran that were left behind buried in hoards that have been used in a large database. **Table 5** provides an overview of the amounts of silver dirhams traded north.⁵⁴

TABLE 5
NUMBER OF DIRHAMS IN HOARDS ACCORDING TO CENTURIES

7 th century	8 th century	9 th century	10 th C.	11 th C.
158	16,640	66,946	183,116	62,027

Source: R. K. Kovalev and A. C. Kaelin, “Circulation of Arab silver in medieval Afro-Euroasia: preliminary observations”, *History Compass*, 2007, 560-580.

The hoards found along the Russian rivers leading to Northern Europe, backing the reports in the literary sources about an intensive exchange occurring along regional and international trade routes, which went on uninterruptedly between the 9th and the 11th centuries for 200 years. They provide confirmation and information on the long-distance overland trade, its monetization and

⁵¹ Persson and Sharp, *An economic history*, 33-35.

⁵² Maya Shatzmiller, “Prices and price formation in the Islamic Middle East: the role of money supply and state policies.” In *Prezzi delle cose nell'età preindustriale • The Prices of Things in Pre-industrial Times: selezione di ricerche = Selection of essays*. (Firenze: Firenze University Press, 2017). (Atti delle “Settimane di Studi” e altri Convegni, 48), pp.15-35.

⁵³ T. S. Noonan, ‘Volga Bulgharia’s tenth-century trade with Samanid central Asia’, *Archivum Eurasiae Medii Aevi* 11, 2001, pp. 140-218.

⁵⁴ R. K. Kovalev and A. C. Kaelin, “Circulation of Arab silver in medieval Afro-Euroasia: preliminary observations”, *History Compass*, 2007, pp. 560-580.

markets. They also establish the existence of a silver trading zone, as a characteristic of the intensive and expanding markets on the North-Eastern route.⁵⁵ The monetization of the markets there was based on an unparalleled availability of silver and on the specialization and division of labour, including the mining occupations. A corresponding trade movement based solely on gold unfolded at the same time in the Mediterranean, combining the Saharan overland routes for gold and maritime transport for manufactured goods.⁵⁶ The import of the Islamic gold from North Africa, which created the Mediterranean gold zone, incorporated southern Europe, North Africa and Egypt, as did the silver incorporating Northern Europe and Islamic central Asia.⁵⁷ The link between urbanization, trade and monetization is provided by archeological excavations that unearthed mining towns surrounding the mines, with shops, markets, schools and mosques, and manufacturing facilities to supply the needs of the population. However, as **Table 6** suggests the contraction in commercial and transport types of occupations, may refer to a vulnerability in the Smithian Growth model when it comes to the transportation branch in the Middle East.⁵⁸

TABLE 6
NUMBER OF OCCUPATIONS (CASES) IN INDUSTRIAL SERVICES
 8th-11th, 12th-15th Centuries

⁵⁵ Maya Shatzmiller, “The role of Money in the Economic Growth of the Early Islamic Period (650–1000),” *Sources and Approaches across Disciplines in Near Eastern Studies – Proceedings of the 24th Congress, Union Européenne des Arabisants et Islamisants, Leipzig 2008*, Verena Klemm et al. eds. *Orientalia Lovaniensia Analecta 215*, (Peeters Publishers, Leuven- Paris-Walpole, MA, 2013), pp. 271-305.

⁵⁶ Maya Shatzmiller, “Islam and the ‘Great Divergence’: The case of the Moroccan Marīnid Empire 1269-1465 A.D.” In *The Articulation of Power in Medieval Iberia and the Maghrib*. (Oxford, Oxford University Press, 2014). *Proceedings of the British Academy 195*, pp. 25-47.

⁵⁷ Andrew M. Watson, “Back to Gold- and Silver,” *The Economic History Review*, 20, 1967, pp. 1-34; Peter Spufford, *Money and Its Use in Medieval Europe*, (Cambridge, Cambridge University press, 1988), pp. 163-186; Gert Rispling, the Swedish numismatic, confirmed to me in a private communication, 10 September 2007 that the North-eastern regions of both Europe and Islam show a total lack of gold currency in circulation at the period under consideration. He said, “The gold tourists admire in the Museum of National Antiquities in Stockholm, is mainly pre-Viking age and post-Viking age,” which confirms the dominance of the Islamic silver in the local economy. The Islamic type imitations in gold from Europe are centred on West Europe and hardly came to the North. He is also unaware of any imitation coin in gold coming from the West via Russia while the reverse is common.

⁵⁸ See detailed analysis of the decline in commercial and transport occupation in Shatzmiller, *Labour*, pp. 259-275.

Occupations	Number of Occupations (Cases)	
	<i>8th-11th Century</i>	<i>12th-15th Century</i>
Commerce	232 (318)	220 (314)
Transportation	30 (43)	25 (36)

Saving on transport costs was a concern to Muslim traders who managed to have the point of exchange closer to their location inside the Islamic territories, or very close to the border. In order to save on transportation costs, animals, men, subsistence, they also arranged for minting of the dirhams they needed in the mines themselves rather than in the government mint in the capital. The central administration showed a keen sense of understanding to their needs and promptly shipped the dies to the mines. The intensity and rapidity of the exchange is confirmed by the speed in which dirhams arrived in Northern Europe, with only the shortest intervals after being struck in the mines.

Conclusion

In contrast to what would be expected of medieval sources, the evidence provided by the medieval Arabic sources on division of labour was more than just adequate. It enabled occupational classification in sectors of employment to be conducted with statistical outcomes similar to those achieved by the same methodology conducted on European cities in the 16th and 17th centuries. The sources enabled us to conduct a study of occupations in sectors of employment and substantiate the statement that specialization and division of labour were common in the manufacturing and the service sectors. The findings of a strong division of labour encouraged us to look for other structural changes in the economy that would explain, sustain it, and suggest an how they were related in an early episode of Smithian Growth in the medieval Islamic Middle East. High urbanization rates, intensive monetization, specialized production along the trade routes, commercialization, and human capital were put on evidence to fulfill the Smithian requirements of aggregate demand and extension of the markets needed to substantiate the impact of division of labour on economic development.

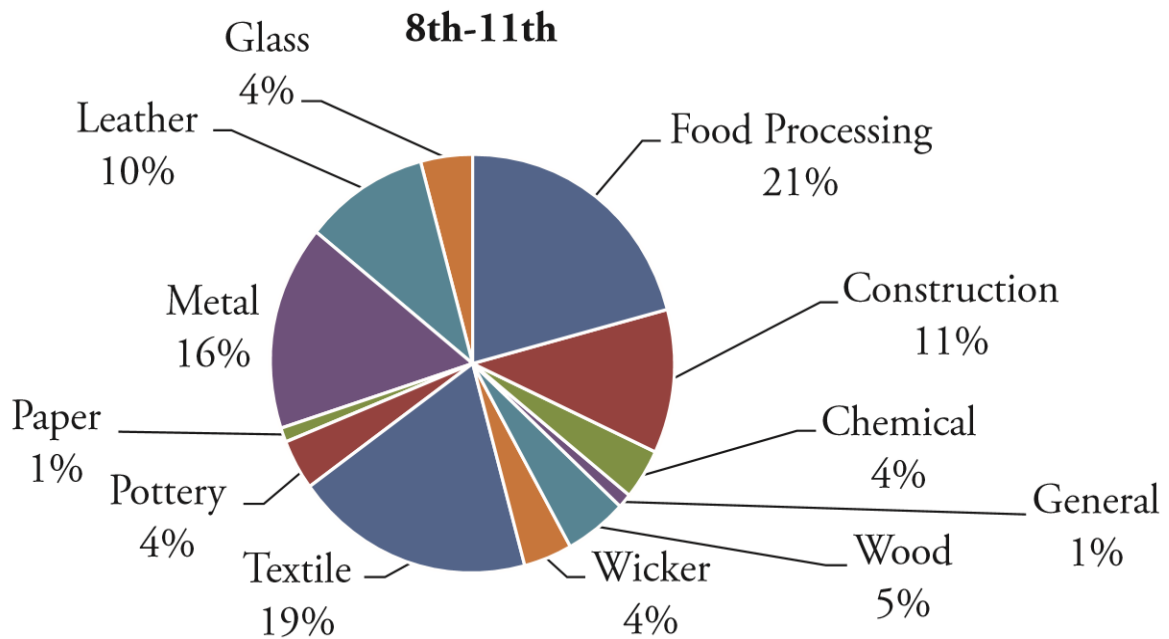
We were able to show the presence of agglomeration effects by extending our sources to include cities of various sizes all across the Islamic Mediterranean, and by recording the frequency

by which an individual tradename appeared in all the sources. By extending our coverage over seven centuries we could conclude that the degree of division of labour observed in the manufacturing and service sectors was long-term, widespread, and common. The findings thus suggest an efficient process in operation across the Middle East, Spain, and North Africa, through which manufacturing techniques were diffused. Thanks to the spread of literacy tools and human capital but equally through trade and commerce that linked commercial centers, a rise in productivity of the agrarian sector may be suggested as well.

The case of the Middle East suggests some clues to questions frequently asked about the process of Smithian Growth. Authors question the dynamics of the process, for instance, what is the 'take off' point' of Smithian Growth? how, why and at what stage the process of division of labour began? In what order economic changes initiate the process? When do small markets with limited division of labour coalesce into the extensive division of labour and economic growth? The Middle East case highlights one factor above all: the impact of money. The velocity and size of the money supply in the Islamic economy was outstanding and occurred at an earlier stage, greatly enhancing the efficiency of the markets. Most importantly, however, the evidence examined here reminds us that exogenous event, the Justinian Plague, was a trigger point of economic development, but that endogenous transformations were essential to the process.

APPENDICES

FIGURE 2
DISTRIBUTION OF THE LABOUR FORCE IN MANUFACTURING
(Percentage represents share of the Total Manufacturing Occupations)



Shatzmiller, *Labour in the Medieval Islamic World*, 201

LIST 1
OCCUPATIONAL DISTRIBUTION OF TEXTILE PRODUCTION

Button Maker, Female Lace maker, Maker of Turbans, Seller of Turbans, Rope Maker, Rope Seller, Hemp Worker, Maker of Silk Head Veil And Sturdy Turbans, Felt Maker, Skirt Maker, Button/Tassel Maker, Sheer Maker, Maker of Tight-Sleeved Coats, Maker of Hats, Seller of Hats, Maker of Shrouds, Seller of Shrouds, Maker of Bed Coverings, Seller Of Bed Coverings, Purple Dye Maker, Purple Dye Seller, Maker Of Women's Veils/Covers For Animal's Eyes, Seller Of Women's Veils/Covers For Animal's Eyes, Maker Of "Batt" Garments (Pieces Of Rough, Square And Usually Green Cloth), Seller Of "Batt" Garments (Pieces Of Rough, Square And Usually Green Cloth), Maker Of Tall Headgear, Seller Of Tall Headgear,

Maker Of Large Carpet, Seller Of Large Carpet, Beater Of Cloths, Maker Of Caps, Seller Of Caps, Maker Of Silk Brocade, Seller Of Silk Brocade, Maker Of Cereal Bags, Seller Of Cereal Bags, Maker Of Sock And Stockings, Seller Of Sock And Stockings, Cloak Maker, Seller Of Woolen Broadcloth, Maker Of Garment/Veil, Dyer Using Lapis-Lazuli, Weaver, Weaver Of Headgear, Weaver Of Lining Materials, Carpet Weaver, Weaver Of Aprons And Silk Fabric For Headgear And Belts, Silk Weaver, Flax Weaver, Weaver Of Sacks And Tents From Canvas, Weaver Of Cloths With Fur, Weaver Of Cotton, Weaver Of Delicate Cotton, Quilt Weaver, Towel Weaver, Wool Weaver, Weaver Of Fabric From The Village Of 'Akraba Near Damascus, Weaver Of Loin Cloths, Braider, Maker Of Rope Soles For Light Footwear, Carder, Silk Merchant, Maker Of Silk Cloth, Seller Of Silk Cloth, Silk Dyer, Silk Weaver, Dress Liner, Silken Shawl Maker, Headgear Maker, Headgear Seller, Maker Of Cloth Caps, Seller Of Cloth Caps, Children's Blanket Maker, Maker Of Pads Carried On The Back By Porters (Or Used To Expand Dough), Maker Of Soft Garments, Seller Of Soft Garments, Fuller, Bleacher, Laundryman, Laundryman Who Bleaches The Laundry, Cutter, Maker Of Cutting Instruments, Flax Manufacturer, Flax Seller, Flax Spinner, Flax Comber, Cotton Spinner, Cotton Seller, Cotton Manufacturer, Cotton Carder, Kerchief Maker, Kazz Silk Maker, Kazz Silk Weaver, Kazz Silk Seller, Low Grade Flax Weaver, Low Grade Flax Seller, Dyer, Tailor, Teamster, Female Dressmaker, Coat Maker, Coat Seller, Maker Of White Linen Cloth Made In Egypt, Seller Of White Linen Cloth Made In Egypt, Dyer Who Uses Crimson, Crimson Dye Maker, Felt Maker, Felt Seller, Maker Of Felt Hair (Or Wool Mingled And Compacted Together), Maker Of Quilts And Quilted Garments, Maker Of Women's Scarves, Maker Of Women's Head-Veil (Made Of Silk Or Linen), Seller Of Women's Head-Veil (Made Of Silk Or Linen), Fan Maker, Flax Comber, Maker Of Belts, Maker Of Women's Veils, Seller Of Women's Veils, Clothes Presser, Peeler Of Silk, Dyer Who Uses Vermilion, Maker Of Vermilion, Embroiderer, Dyer Who Uses Oxidized Copper, Wool Carder, Cotton Carder, Mattress Maker, Carder, Maker Of Cushions/Beds, Unraveler (Of Raw Silk), Maker Of Coats Of Mail, Garment Mender, Embroiderer Of Garment, Maker Of Garment, Seller Of Garment, Female Embroiderer, Garment And Leather Dyer, Textile Dyer, Dyer Of Silk And Yarn, Silk Cloth Maker, Silk Cloth Seller, Dyer Who Uses Sumac, Silk Producer, Manufacturer Of Blue Cloth (For Uniforms), Manufacturer Of Ribbon/Cord/String, Maker Of Veil, Maker Of Underclothing, Seller Of Underclothing, Maker Of Wool And Woolen Garments, Maker Of Halters Made Of Hair, Seller Of Halters Made Of Hair, Maker Of Mamluk Hats, Tassel Maker, Maker Of Baghdadi Cloth, Maker Of Curtains/Veils/Screens, Maker Of Carpets/Mats, Seller Of Carpets/Mats, Female Embroiderer, Female Bonnet Maker, Maker Of Wool Article (Worn By Persians Or Foreigners), Seller Of Wool Article (Worn By Persians Or Foreigners), Maker Of Turban/Cloth Made In Tustar, Seller Of Turban/Cloth Made In Tustar, Dyer Who Uses Saffron, Downer, Embroiderer In Gold And Silver

Source: Shatzmiller, *Labour in the Medieval Islamic World*, 118-123.

LIST 2

AVERAGE PRICES OF CLOTHING ITEMS, EGYPT, 11th-13th CENTURIES (in gold dinars)

Regular consumption Item (Ashtor)	Price	Expensive (Stillman)	Item Price
Simple <i>thaub</i> (cloth)	1-2	<i>Thawb</i>	6.20
Elegant <i>thaub</i> (cloth)	3-4	<i>Jukāniyya</i>	3.37

Simple <i>ghilāla</i> (cloth)	1 1/2	<i>Mindil</i>	3.04
Elegant <i>ghilāla</i> (cloth)	4	<i>Mukallaf</i>	2.72
Simple <i>jukāniya</i> (cloth)	1/2	<i>Niqab</i>	1.25
Elegant <i>jukāniya</i> (cloth)	1-3	<i>Radda</i>	2.18
Simple <i>mindil</i> (scarf)	1/3-1/2		
Elegant <i>mindil</i> (scarf)	1-2		
Simple <i>wasat</i> (waist wrap)	1-1 1/2		
Elegant <i>wasat</i> (waist wrap)	2 1/2-3		
Simple <i>mal'a</i> (outer wrap)	1		
Elegant <i>mal'a</i> (outer wrap)	3-4		
Simple <i>milhafa</i> (coat)	1		
Elegant <i>milhafa</i> (coat)	2-3		
Simple <i>ridā</i> (cloak)	1		
Elegant <i>ridā</i> (cloak)	3		
<i>Makhtūma</i> (dress)	5 at least		
<i>Khil'a</i> (robe of honor)	10-15		
Turban	2-3		
Elegant <i>mi'jar</i> (head cover)	2-3		
Simple skullcap	1		
Elegant skullcap	2		
Head cover	1		

LIST 3
COMMODITIES PRODUCED IN THE TOWNS OF THE NORTH-EAST

“...As regards merchandise the following was exported:
from *Tirmidh*, soap and asafetida [a natural resin],
from *Bukhara*, soft fabrics, prayer-carpets, woven fabrics for covering the floors of inns, copper lamps, Tabari tissues, horse-girths (which are woven in places of detention) Ushmuni fabrics, sheepskins, oil for anointing the head;
from *Karminiya*, napkins

from **Dabusiya and Wadhar**, Wadhari fabrics which are dyed in one color. I have heard that one of the sultans of Baghdad called them the satin of Khurasan.

From **Rabinjan**, winter cloaks of red felt, prayer-carpets, pewter ware, skins, strong hemp and sulphur

from **Khorezmia** sables, miniver, ermines and the fur of steppe foxes, martens, foxes, beavers, spotted hares and goats, also wax arrows, birch-bark, high fur caps, fish glue, fish teeth (walrus), castoreum, amber, prepared horse hides, honey, hazelnuts, falcons, swords, armour, khalanj wood (birchwood), slavonic slaves, sheep and cattle. All these came from Bulghar, but khorezmia exported also grapes, many raisins, almond pastry, sesame, fabric of striped cloth, carpets, blankets cloth, satin for royal gifts, coverings of mulham fabric, locks, Aranj fabrics, bows which only the strongest could bend, rakhbin (a kind of cheese) yeast, fish, boats (the later also exported from *Tirmidh*)

from **Samarqand** is exported silver colored fabrics (simgun), and Samarqand stuffs, large copper vessels, artistic goblets, tents, stirrups, bridle-heads and straps,

from **Dizak** fine kinds of wool and woolen clothes

from **Banakath** Turkistan fabrics

from **Shash** high saddles of horsehide, quiver, tents, hides(imported from the Turks and tanned), cloaks, praying carpets, leather capes, linseed, fine bows, needles of poor quality, cotton for export to the Turks, and scissors

from **Samarqand** again, satin which is exported to the Turks and red fabrics known by the name of mumarjal, sinizi cloth, many silks and silken fabrics, hazel and other nuts

from **Farghana and Isfijab**, Turkish slaves, white fabrics, arms, swords, copper, iron

from **Taraz** (Talas) goatskins

from **Shalji**, silver

from **Turkistan**, horses and mules are driven to those places, and also from *Khuttal*.

There is nothing to equal the meats of **Bukhara**, and a kind of melon they have called ash-shaq (or ash-shaf), nor the bows of **Khorezmia**, the porcelain of **Shash** and the paper of **Samaeqand**.