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Prices and Wages in India (1200-1800): Source Material, Historiography and New Directions

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Source Material on Indian Prices and Wages

Quantitative data on prices, wages and income are extremely limited and fragmentary for the whole of medieval India (1200-1800 AD). It is only from the middle of the nineteenth century (1861 AD) that one begins to get unbroken statistical series on prices and wages. This explains the short treatment the above themes have received in current historiography. However, there is sufficient evidence - some of it fresh - to commence the compilation of a database for prices and wages as well as to comment on their long-term movements.

The first type of sources in which information on prices and wages can be found are Persian chronicles, official documents and administrative manuals. The chronicles

supply incidental references while describing an event or the achievements of a ruler. Most official documents are orders and instructions which carry occasional or specific references to prices and wages. The most notable of these are price reports sent by government officials from the market to the headquarters of an administrative unit. Such reports are a very rich source of information but have survived for only one region, the Deccan, or that part of peninsular India which is situated between the rivers Narmada and Krishna. Persian chronicles (such as the *Mirat i Ahmadi*) tend to reproduce official documents for the purpose of amplifying the narrative. In fact, many official documents have survived only as copies recorded by the chroniclers, the originals having been lost. Most administrative manuals are normative texts (*Dastur ul Amal*) written by professional scribes for education. Very often, they too record and reproduce official documents or information contained therein.

The most outstanding of the Persian chronicles which combines all three genres – chronicles, official documents and manuals - is the *Akbarnama* by Abul Fazl (the official historian of Akbar and his ideological counsellor). Divided into three volumes, the *Akbarnama* is a detailed, systematic, judgmental and majestic account of Akbar and his Empire (1556-1605). The first two volumes constitute the narrative part, and the third, called the *Ain i Akbari*, is a separate work. The *Ain*, being altogether different in its character from the narrative part, is specifically meant to be some kind of a gazetteer of information. It contains a mine of statistical information on the sixteenth century, without parallel in the historiography of India until the appearance of the imperial gazetteer in the nineteenth century. The book contains statistics on the prices of various

commodities and building materials, the salaries of soldiers and officials and the wages of construction workers.

The material available in European languages, notably the commercial correspondence of the English and Dutch East India Companies and the accounts of foreign travellers, constitutes a second type of source for the study of prices and wages. The immediate mercantile considerations of the European factors in India, as well as some of the travellers (such as Tavernier, the peripatetic French jeweller), drove them to record a wide variety of information on various aspects of the economy and the suitability of this type of material for a study of seventeenth century prices and wages has been acknowledged in the present study. Information arising out of curiosity and the urge to describe a new place or people is also of some value if used carefully and critically.

The geographical and temporal distributions of the Persian and European sources are quite uneven. Although most Persian political narratives claim to be pan-Indian in character, they tend to focus on the core areas of kingdoms and empires such as Delhi, Agra or Lahore. This was also the case with European documentation which remitted information only from the major commercial and administrative centres of India. Certain regions are blessed with local histories (such as Gujarat and Sind in western India) but these are few and far between. Similarly, not all centuries get a fair share of histories and documents. For instance, for the entire period of medieval Indian history before the arrival of the Mughals (1200-1500), there is only one source (*Tarikh i Firozshahi*) with some data on prices and wages in the fourteenth century. The seventeenth century is

arguably the richest in terms of the availability of source material due to a combination of Mughal and European sources and is heavily represented in all the studies.

Regional archival material, the third type of sources, can fill much of the gap in time and space. It comprises histories, official documents, private letters, market reports and salary papers preserved in various regional archives in India in different languages. Their exploration requires familiarity with regional languages and scripts as well as prolonged searches since many of them are not even catalogued. They have been explored only partially in the present work.

The fourth type of source material is numismatic. Any study of prices and wages expressed in a variety of currencies and denominations has to come to terms with the weight, fineness and exchange value of these currencies. Information on these aspects can be derived from specimens preserved in museum and private collections (published in catalogues and numismatic literature) and co-related with textual material. As we shall see, such information can be of immense importance in the analysis of the long-term movement of prices and wages.

Most of the quantitative data used in this study are freshly compiled and culled from primary sources. These are presented in tabular forms and divided into two parts: the Delhi Sultanate (1200-1526 AD) and the Mughal Empire (1526-1761 AD). This division is not all that arbitrary as it is dictated by the magnitude of source material available to us as well as the change in political rule. Even though a good deal of new evidence has been adduced to throw fresh light on the subject, the present research cannot claim to have exhausted so vast a theme as the one on which the Utrecht Conference is

deliberating or addressed all the relevant issues with perfection. It merely aims to add to our empirical knowledge of those aspects of medieval Indian economy which are yet to become a major focus of attention in the current historiography.

The Structure of Medieval Indian Economy (1200-1800 AD)

Two domains of economic activities seemed to have co-existed in medieval Indian society: one of subsistence and inflexibility in which the village community lived self-sufficiently, peasants grew and consumed, and artisans produced and bartered. It is generally understood that the use of money here was marginal and exchange was based mainly on the socially established network of reciprocal obligations.[1]

The other domain, in which economic life was buoyant and movements visible, was indicated by the prevalence of market relations of exchange and the use and flow of money. Even though there is no way of measuring the quantitative magnitude of either sector of the economy, it is possible to argue that both spheres underwent significant changes during the medieval period.

In the countryside, at some point, services were indeed bartered and obligations were fixed and settled in kind or via the distribution of rights for the use of village resources, creating the impression of a "natural economy". Such practices continued in

[1] It is difficult to find in conventional sources any detailed information on the subsistence sector which possibly existed right from the days of the pure barter economy. For its presence in different parts of India from the sixteenth to the nineteenth centuries based mainly on inferences drawn from later sources see Chicherov, *India. Economic Development in the Sixteenth-Eighteenth Centuries*, pp. 21-42. For seventeenth century western Deccan see Fukazawa, "Non-Agricultural Production", pp. 308-9. Also see Raychaudhuri, *ibid*., pp. 279-80, 325; Habib, *Agrarian System*, pp. 59-60, 118-9.

varying degrees even after the partial monetization of the village economy. In the absence of detailed micro-studies of the different regions of India, one cannot possibly fix a chronology for the transition from barter to monetized exchange and its impact on prices and income.

Within the monetized sector of the medieval economy, two broad streams of exchange can be identified. The first stream was local where the demand for exchange stemmed from the consumption of goods and services and the tax obligations of various sections of the population. At the lowest level, the village community obtained its weekly supplies of various types of goods (salt, spices, metals, etc.) from the nearest township (*qasba*), and made cash payments to its functionaries and to the state in the form of revenue. Money supply in the village came from the sale of its agrarian products in different markets. The village supplied grains to the *qasbas* and nearby towns through rural merchants (*baniyas*; *mahajans*) and itinerant traders (*banjaras*) who brought the cash back to the countryside. Villages situated near trade routes developed their own markets for specific commodities and held big seasonal fairs which attracted buyers from near and afar. Village-level documents of the seventeenth century show entries in account books relating to cash payments made to officials and a money-changer (*sarraf*). Jean Baptiste Tavernier says that a village in India may indeed be very small if it had no money-changer (c. 1666 AD).[2] The presence of the *sarraf* suggests that the village community was drawn into the vortex of monetary economy and was familiar with the conception of exchange rates.

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[2] Tavernier, *Travels in India*, I, p. 10.

The other stream of exchange extended from the countryside to the urban centres for seasonal supplies of export goods. All major commodities which generated trade surplus - textile, indigo, saltpeter and sugar - were produced and processed in villages before being fed into the market chain which led to export. This network of exchange involved peasants and manufacturers at the local level and merchants, brokers, transporters and a host of other people at multiple intermediate stages.

The urban centres and entrepots of India were immersed far more deeply in the circuit of market exchange. Here, the concentration of the bureaucracy, soldiery, mercantile classes and artisans created permanent demand for food supplies, craft goods and services. Urban taxes, such as customs and transit dues and mint seigniorage, were always paid in cash and were used to meet administrative costs and the consumption expenses of resident ruling elites.

Both networks of exchange were based on the cash-nexus and required the use of money at each point. Since there was no domestic extraction of gold or silver, and very little of copper, in each season the internal circulating media had to be reinforced with fresh supplies from foreign markets. This was accomplished by defining the terms of foreign trade in a manner in which Indian imports consisted predominantly of monetary metals (see below).

Prices in Medieval India

Prices are an expression of the money value of commodities, stated in the currency of the market or a unit of account linked to that currency. Generally speaking, prices are determined by the supply and demand of both commodities and money. While factors such as monopoly and guild regulations remain influential, their long-term effect on price levels is usually considered limited. Therefore, changes in the level of prices are seen as symptomatic of changes not only in the volume and organization of commodity production and exchange but also in the state of monetary circulation. Also, the movement of prices has implications for the size of wages and profits and the process of income distribution. This explains the interest of economic historians in the subject though the difference in their treatment of empirical data leads them to different conclusions. The fragmentary nature of existing evidence, mainly the absence of an unbroken price series for a basket of commodities for any region of the empire, restricts our analysis of price movements to a small selection of commodities.

Money and Prices in the Delhi Sultanate: 1215-1526

The establishment of the Delhi Sultanate in the thirteenth century witnessed a perceptible change in the production and circulation of money in the form of a standardized multi-metallic currency system. The widespread circulation of gold, silver and billon (base metal mixed with silver) currencies indicates large-scale transactions which fuelled the

expansion of the Sultanate's exchange network. It was possible for the state to realize revenue in cash, for peasants to pay taxes by selling their products in the market, and for merchants, manufacturers and bankers to make money out of cash and credit transactions.[3]

The pure silver *tanka* (169.8 grains) of the Delhi Sultanate, and its fraction (half a *tanka*), was employed in higher value transactions, such as the purchase of horses, slaves, concubines and textile (Table 1), payment of servants' wages (fixed annually), payment of piece wages of a skilled craftsman, or money given out in charity. The gold *tankas* were minted in limited quantities for use in high-value exchanges, gifts and imperial and elite hoardings.[4]

Most cash transactions below the value of a half *tanka* were conducted in a series of billon coins minted by the Delhi Sultans, which were known by the generic name of *jital* (gross weight 57.6 grains). The prices of essential commodities, such as grain or garments, and the daily wages of labourers and artisans were quoted and paid in *jitals*. From the mid-thirteenth century, the silver content of each *jital* was increasingly expressed in a unit of the lowest denomination called *gani* (2.83 grains), 48 of which could be exchanged for 1 *tanka*.[5]

In the copper currency sector, the heaviest coin of the early Sultans weighed 72 grains and was known by the popular designation of *paika* with its half called *adhva*.[6]

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[3] Haider, "International Trade in Precious Metals", pp. 237-54.
[4] Barani, *Tarikh i Firozshahi*, pp. 280, 310-4; Sijzi, *Fawaid ul Fuad*, p. 83; Khurd, *Siyar ul Auliya*, p. 516; Habib, "Non-Agricultural Production and Urban Economy", pp. 87-8.
[5] Pheru, *Dravya Pariksha*, pp. 1-38; Afif, *Tarikh i Firoz Shahi*, p. 344; Barani, *Tarikh i Firozshahi*, p. 318. For numismatic evidence see Wright, *Coinage and Metrology of the Sultans of Delhi*.
[6] Pheru, *Dravya Pariksha*, pp. 37 (Table 29), 38 (verse 148); Afif, *Tarikh i Firuz Shahi*, p. 344.

The weight of the *paika* was meant to be equivalent to a quarter of the billon *jital*. Although the rate was susceptible to changes in the bi-metallic ratio, it was maintained for a considerable period of time.

Table 1

Prices of Food Items : 1296-1388 AD

(*Jitals* per maund)

Items	**1296-1316 AD**	**1324-51 AD**	**1351-88 AD**
Wheat	7.5	12.0	8.0
Barley	4.0		4.0
Paddy	5.0	14.0*	
Pulse (*mash*)	5.0		
Pulse (*moth*)	3.0		
Gram	5.0		4.0
Refined sugar	100.0		
White sugar	60.0		
Red sugar	13.3		
Clarified butter			26.7
Sesame oil			13.3
Salt			2.0

* Husked rice.

Note: 48 *jitals* = 1 *tanka* of 1698.8 grains of fine silver.

Source: Barani, *Tarikh i Firozshahi*, pp. 305, 310; Habib, "Non-Agricultural Production and Urban Economy", pp. 88-9.

The sources of the Delhi Sultanate reflect on the growing pace of commercialization and monetization but refrain from supplying systematic information on prices. The only exception is a general history of the Sultanate, *Tarikh i Firozshahi* by

Ziauddin Barani, which records price figures for a whole range of commodities during the reign of Alauddin Khalji at the turn of the fourteenth century (Tables 1 and 2). The significance of these figures somewhat diminishes once we realize that a strict price-control system was instituted by Sultan Alauddin Khalji to raise the armed strength of his kingdom in the face of repeated Mongol incursions without straining its resources. To reduce the cost of subsistence, the prices of all items of consumption were reduced and regulated through subsidies and other measures.

Table 2

Prices of Horses, Cattle and Slaves: 1296-1316 AD

Items	**Prices in *tankas***
Horse (grade 1)	100-120
Horse (grade 2)	80-90
Horse (grade 3)	50-70
Indian Pony	10-25
Ox	5
Milch Cow	3-4
Cow for Meat	1.5-2.0
Milch Buffalo	10-12
Buffalo for Meat	5-6
Goat and Sheep	0.17-0.23
Female Slave (Domestic)	5-6
Female Slave (Concubine)	20-30
Male Slave (Young and Handsome)	20-30
Male Slave (Skilled)	10-15
Male Slave (Ordinary)	7-8

Source: Barani, *Tarikh i Firozshahi*, p. 314.

Alauddin's price regulations were abandoned by his successor, Qutubuddin Mubarak Khalji (1316-20). Prices rose in the second quarter of the fourteenth century (Table 1) and contemporaries recalled with nostalgia the cheapness of commodities in the years gone by.[7]

To some extent, the inflationary trend was checked and reversed from the second half of the fourteenth century. This was attributed by our informants to a succession of good harvests but our informants also alluded to a severe contraction in the circulation of precious metal coinage. A prolonged international crisis of silver from about the middle of the fourteenth century and the inability of the hinterland economies of the Sultanate to draw precious metals from the relatively rich currency regimes of the coasts brought the classical currency system of the Delhi Sultanate to an end.[8] Silver and gold were replaced by billon and copper coins, which became the principal media of exchange till the middle of the sixteenth century. The most remarkable sign of the downturn was the progressive debasement of the silver *tanka* to a point where it practically became a copper coin with a streak of silver and earned the designation *tanka i siyah* (black *tanka*). Plentiful harvests and monetary contraction together induced a shift in the mode of revenue payment from cash to kind as well as deflation.[9]

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[7] Habib, "Non-Agricultural Production and Urban Economy", p. 88.

[8] Monetary historians of medieval Europe largely agree on a scarcity of silver in the late Middle Ages, prolonged and intense enough to designate it a period of "bullion famine". The case is most persuasively argued in Day, "Great Bullion Famine", pp. 4-7. Also see Spufford, *Money and its Use in Medieval Europe*, pp. 339-62; Munro, "Bullion Flow and Monetary Contraction", p. 101. For the mid-fourteenth century crisis of silver specie in Egypt, see Lopez, Miskimin, Udovitch, "England to Egypt", p. 124.

[9] Haider, "International Trade in Precious Metals", pp. 237-54.

The "Price Revolution" in Mughal Historiography

In Europe, the prices of many goods rose substantially in the long sixteenth century (1460-1650). German historians (G. Wiebe and J. M. Bonn, 1895) were the first to characterize the long-term trend as a price revolution and others too considered it to be the longest price movement in modern history. The annual rate of inflation (1 percent) appears slow by modern standards, but it was twice as fast as the medieval wave of 1270-1340 AD. An historian observed that "the most remarkable feature of the Price Revolution was not the pace at which prices rose, but the fact that a rising trend was sustained for so long". The experience of one place or commodity was not representative of the price revolution as a whole and patterns varied from one commodity or city to another. But in general, the price revolution of the sixteenth century was fairly consistent in much of the western world.[10]

On the causes and consequences of the European Price Revolution, modern historians have offered a variety of interpretations. Earl Hamilton observed a close connection between a rise in commodity prices at Seville (four and a half times in the sixteenth century) and the influx of large amounts of American silver and gold into Spain (16,886 metric tons of silver and 181 metric tons of gold between 1503 and 1660). Hamilton saw a similar co-relation, reinforced later by Braudel and Spooner, between European price rises and the diffusion of Spanish- American bullion into the continent.

[10] Fischer, *The Great Wave*, pp. 65-84.

More significant has been Hamilton's statement that money supply drove prices above labour costs and created profits which entrepreneurs invested in industrial expansion. The "profit inflation" and capital accumulation resulted in a more rapid rate of industrial growth than was possible under stable prices.[11]

While Hamilton's critics do not deny the reality of either the silver influx or the price revolution, the common ground of many criticisms has been that Hamilton's sequences of co-relations are empirically inconsistent. Prices began to rise from the last quarter of the fifteenth century (Florence, Spain and Portugal, Southern Germany and France) when there was no silver influx, while they stabilized in the seventeenth century when the influx was much greater in magnitude (three times according to Morineau's figures).[12] There were sharp increases in food prices but smaller increments in the prices of manufactured goods. Also, Spain had the greatest price rise but the least profit inflation while France had the least price rise with the greatest profit inflation.[13]

Critics of the monetarist model shifted the focus of attention to real factors in the economy such as population growth, migration to urban centres (Brenner) and state expenditure (Cipolla). A few of them attempted to bridge the two explanations by

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[11] Hamilton, *American Treasure and the Price Revolution in Spain*, pp. 283-306; *idem*, "Profit Inflation and the Industrial Revolution", pp. 256-73; repr. pp. 323-36; Braudel and Spooner, 'Prices in Europe from 1450 to 1750', *Cambridge Economic History of Europe*, pp. 374-486, esp. pp. 442-50. For contemporary explanations of the European price rise in which the role of money and precious metals figured prominently see Grice-Hutchinson, *The School of Salamanca*, text, pp. 89-95; Vilar, *A History of Gold and Money*, pp. 76-83, 155-80.

[12] Morineau, *Incroyables Gazettes et Fabuleux Metaux*, p. 578 (Table 83).

[13] Ramsay ed., *The Price Revolution in Sixteenth Century England*; Burke ed., *Economy and Society in Early Modern Europe*. For wide-ranging comments on the relationship between money, prices and industrial growth see Felix, "Profit Inflation and Industrial Growth", pp. 133-51.

linking price rises with debasement and an increase in the velocity of money circulation, and the latter with population growth and urbanization.[14]

In the beginning, India appeared on the margins in all the discussions on the causes and implications of the European price revolution. Both Hamilton and his critics acknowledged that a part of European bullion found its way to Asia, particularly India and China, but that was inconsequential as much of it was hoarded rather than monetized. This understanding bore the deep impression of a century of European scholarship on the character of non-capitalist societies. Marx contrasted the role of precious metals in European and Indian economies, while Weber considered the lack of necessary infrastructure as an important reason for India's inability to produce economic changes comparable to the European Price Revolution.[15] Even W. H. Moreland, who studied and raised questions relevant to monetary history, shared the view that the sphere of exchange in India was largely untouched by the absorption of precious metals.[16]

In the past 50 years, numerous studies have appeared which have enriched our understanding of the Mughal economy. Three approaches characterize the study of prices in the Mughal Empire based on the treatment of empirical data and the factors of change in the economy.

The first approach advocates that there was a rise in prices in India in the seventeenth century, caused by an increase in monetary circulation. Aziza Hasan counted and serialized museum specimens of the rupee (all rupees have dates on them) and argued

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[14] Miskimin, "Population Growth and the Price Revolution in England", 1975, pp. 179-86.

[15] Marx, *Contribution to the Critique of Political Economy*, pp. 134-5, 150; Weber, *General Economic History*, pp. 353-4.

[16] Moreland, *India at the Death of Akbar*, pp. 184-5, 264-6.

that the level of silver circulation had increased by 200 percent in the seventeenth century. Hasan also observed that the shape of her currency curve corresponded with Hamilton's histogram of Spanish silver imports on the one hand and fluctuations in the prices of monetary metals in the Mughal Empire on the other.[17]

Hasan's work signalled an endorsement of the monetary approach by Indian historians and the attempt to integrate the Mughal Empire into the global economy of early modern times.[18] It was reinforced by an improved database from Shireen Moosvi which showed an increase of 138 percent in the level of silver circulation in just about the same period. After making adjustments to account for stability in the purchasing power of the rupee as well as population growth (T of the Fisher equation), the net increase was set at 24 percent. The rise in the silver price of copper and gold was calculated and the extent of a general rise in silver price was located within the band of these indices, closer to the price of gold, at 27 percent.[19]

The second approach, which is yet to be fully articulated, accepts inflation but links it to real economic factors, such as the growth in population, urbanization and the volume of inland commerce stimulated by Mughal revenue demand. Foreign trade and bullion flows are assigned marginal importance and the internal dynamics of the Mughal economy are treated as the ultimate driving force behind long-term price changes.[20]

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[17] Hasan, "Silver Currency Output of the Mughal Empire", pp. 85-110. Also see Habib, "Monetary System and Prices", pp. 363-6.

[18] See Miskimin's critical approval of the relevance of Hasan's efforts for studying the global movement of American silver in *Economy of Renaissance Europe*, p. 132.

[19] Moosvi, "Silver Influx, Money Supply", pp. 47-94, 81-8. Also see Habib, *Agrarian System*, p. 449.

[20] Raychaudhuri, "Inland Trade", pp. 335-7. This is set against the background of Raychaudhuri's general argument, namely that the aggregate demand for manufactured goods in the Mughal empire was large and expanding ('Non-Agricultural Production', pp. 261-9).

The denial of price inflation in the seventeenth century characterizes the third approach, which is followed commonly by scholars focusing on foreign trade. Moreland was the first to argue that there was no perceptible sign of any long-term change in prices. Later, the treatment by Van Santen of the prices of food items sold in the markets of Gujarat suggests a more or less stable trend.[21] The other region for which a similar study of food prices had been undertaken by Om Prakash is Bengal, and here too no discernible movement was noticed.[22] Even though the regional studies of Moreland and Van Santen cover the first half of the seventeenth century and that of Prakash begins with the second, they collectively present a powerful case for stability in price trends in the seventeenth century. Since this approach is also monetarist in orientation, the link between money and prices is not denied explicitly.[23] Rather, the stability of prices is treated, in the face of growing money supply, as an indication of an expansion in the volume of commerce.

Money and Prices in the Mughal Empire: 1526-1761 AD

In its early stages, the Mughal monetary system represented the continuation of the billon-copper regime of the late Delhi Sultans. A new tri-metallic currency was

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[21] Van Santen, *De VOC in Gujarat en Hindustan*, pp. 83-100.

[22] According to this argument, the increase in exports (and export-surplus) involved a net increase in output and income (Y). In terms of the national income identity : $Y = C + I + (X - M)$: an increase in the export-surplus $(X - M)$ could be effected through a decline in consumption (C) or/and investment (I) or/and increase in output and income (Y). Since there was no decline in C or I in Bengal, an increase in $X - M$ effected an increase in Y. Prakash, *Dutch East India Company and the Economy of Bengal*, pp. 234-56; *Precious Metals and Commerce*, p. X.

[23] Moreland indeed saw a rise in Bengal prices to be a function of European bullion imports, but Om Prakash, while retaining the emphasis on European imports, has dismissed Moreland's claim.

established in the third quarter of the sixteenth century consisting of the silver *rupiya* or rupee (178 grains), the gold *muhr* (169 grains) and a heavy copper coin called *paisa* or *dam* (323 grains). Much of the precious metal, mainly silver, used to support the new currency economy was obtained from the mines of Peru and Mexico to finance the Indian Ocean trade. With an annual supply ranging between 85 and 131 metric tons of silver, the Mughal Empire became the biggest importer of foreign bullion outside Europe in the late sixteenth as well as seventeenth century.[24]

At the same time that Spanish-American silver was on its outward journey to India, the Mughal Empire expanded westwards to embrace the coastal regions of Gujarat and Sind (port cities of Surat and Thatta), which were direct recipients of foreign bullion not only from Europe but also Japan. In the second half of the seventeenth century, Bengal emerged as a major destination for the transmission of precious metals by the Dutch (VOC) and English East India Companies. The territorial expansion of the Mughal Empire created conditions for the integration of coastal hinterlands into a single network of commodity exchange, fiscal remittances and currency circulation.

The absorption of external and internal stocks of monetary metals was facilitated by the state and the market. The Mughal state adopted fiscal and monetary policies which streamlined and expanded currency circulation in the Empire. A policy of collecting taxes and disbursing salaries in cash was pursued to trigger a cycle of monetary circulation. In addition, a series of measures was taken to create a standardized currency system through

[24] Haider, "Precious Metal Flows", pp. 298-364. Estimates available for Ming China, a major recipient of foreign bullion in Asia, suggest an annual import of 43 to 46 metric tons of silver in the second half of the sixteenth century - almost one third of the estimated figures we have for the Mughal Empire. Von Glahn, *Fountain of Fortune*, pp. 133-40.

the replacement of regional as well as old and sub-standard coins with freshly minted Mughal currency.

Mughal mints were an important instrument of currency supply and control and operated in the major cities of the Empire. The mints worked on the principle of open coinage which entitled the supplier of monetary metal and demonetized specie to receive freshly minted coins on payment of brassage and seigniorage (mint charges). The mint price of the monetary metal (number of coins delivered by the mint) was always higher than its market price since the *sarrafs* (buyers for the mint cum money-changers) charged commission on the sale of currencies. Since rupees, *muhrs* and *dams* circulated at a premium which was made up entirely of their costs (mint charges and commissions), their exchange rates were determined by the market.[25]

Money-changers and merchants offered a certain uniformity and cohesion to the areas covered by the network of monetized exchange by negotiating the movement of cash, goods and services across customs barriers and between different sectors of the economy through *commenda*, money-changing (*sayrafi*), deposit banking, respondentia (*avak*), bills of exchange (*hundi*), commercial usury, and inland and marine insurance (*bima*).[26] The standardized currency and credit systems were sustained by a constant flow of silver through foreign trade and its absorption into the circuit of exchange.

For the Mughal Empire, information on the prices of various commodities, notably food products, is available in the *Ain i Akbari*. The *Ain* was formally completed in Lahore, the then capital of the Empire, during 1597-1601 AD, although much of its

[25] Haider, "Precious Metal Flows", pp. 332-3, 354.
[26] Haider, "Monetary Basis of Banking", pp. 58-79.

statistical information belongs to the year 1595 AD. Two things should be noted about the information. First, it appears that the figures which the author collected for his work were of prices prevalent in the markets of Lahore. Second, they do not represent normal market conditions as the author himself explains that prices rose when Lahore was made the capital and, in order to provide relief, a remission of 20 percent was granted to tax payers by the state. For the purpose of comparison, therefore, all prices which are given in the *Ain*, and which specifically belong to the city of Lahore, have to be scaled down at least by 20 percent.

Prices of Articles of Food

Most of the prices quoted in the *Ain* are the prices of food articles purchased by the Superintendent of the Imperial Kitchen (*mir bakawal*) from the markets of Lahore. The prices are usually given in *dam*, a copper coin of 323 grains (20.93 grams). In Table 3, such prices are converted into rupees, the Mughal silver coin of 178 grains (11.54 grams), and the current unit of weight (*man i Akbari* or maund of 25.11 kgs). To have an idea of the relative prices of the various commodities, all figures have been indexed to the price of wheat.

Table 3

Food Prices in Lahore: 1595 AD

Items	**Rupees per maund of 25.11 kgs.**	**Index (Wheat = 100)**
Wheat	0.30	100
Kabul gram	0.40	133
Gram	0.20	67
Lentils	0.30	100
Barley	0.20	67
Millet (*arzan*)	0.15	50
Millet (*shamakh*)	0.15	50
Millet (*kodram*)	0.18	60
Millet (*bajra*)	0.20	67
Millet (*gal*)	0.20	67
Millet (*juwar*)	0.25	83
Linseed	0.25	83
Safflower seed (carthamus)	0.20	67
Fenugreek	0.25	83
Peas	0.15	50
Mustard seed	0.30	100
Paddy (grade I)	2.75	917
Paddy (grade II)	2.50	833
Rice (grade I)	2.50	833
Rice (grade II)	2.25	750
Rice (grade III)	2.00	667
Rice (grade IV)	1.25	417
Rice (grade V)	1.00	333
Rice (grade VI)	0.50	167
Pulse (*mung*)	0.45	150
Pulse (*mash*)	0.40	133
Pulse (*moth*)	0.30	100
Pulse (*lobiya*)	0.30	100
White sesame	0.50	167

Black sesame	0.47	157
Wheat flour (fine)	0.55	183
Wheat flour (coarse)	0.38	127
Gram flour	0.55	183
Barley flour	0.28	93
Fennel	0.25	83
Spinach	0.40	133
Mint	1.00	333
Onion	0.15	50
Garlic	0.25	83
Turnip	0.52	173
Cabbage	1.00	333
Carrot	1.00	333
Egg-plant	1.50	500
Ginger (green)	2.50	833
Mutton	1.62	540
Goat meat	1.35	450
Clarified butter	2.63	877
Oil	2.00	667
Milk	0.62	207
Curd	0.45	150
Refined sugar	6.00	2000
Sugar candy	5.50	1833
White (powdered) sugar	3.20	1067
Red sugar	1.40	467
Saffron	400.00	133333
Cloves	60.00	20000
Cardamoms	52.00	17333
Round pepper	17.00	5667
Long pepper	16.00	5333
Dry ginger	4.00	1333
Cumin seed	2.00	667
Aniseed	2.00	667
Turmeric	10.00	3333

Coriander seed	3.00	1000
Asafetida	2.00	667
Sweet fennel	1.00	333
Cinnamon	40.00	13333
Salt	0.40	133
Sour limes	6.00	2000
Lemon juice	5.00	1667
Wine vinegar	5.00	1667
Sugarcane vinegar	1.00	333
Mangoes in oil	2.00	667
Mangoes in vinegar	2.00	667
Lemons in oil	2.00	667
Lemons in vinegar	2.00	667
Lemons in salt	1.50	500
Lemons in lemo n juice	3.00	1000
Pickled ginger	2.50	833
Turnips in vinegar	1.00	333
Pickled carrots	0.50	167
Pickled apples	8.00	2667
Pickled quinces	9.00	3000
Pickled garlic	1.00	333
Pickled onions	0.50	167
Pickled egg-plant	1.00	333
Pickled raisins	8.00	2667
Pickled peaches	1.00	333
Pickled mustard	0.25	83
Pickled cucumbers	0.50	167
Pickled radishes	0.50	167
Pomegranates	6.50 to 15.00	2167 to 5000
Kashmir grapes	2.70	900
Dates (Central Asian)	10.00	3333
Dates (Indian)	4.00	1333
Raisins	9.00	3000
Plu ms	8.00	2667

Dried apricots	8.00	2667
Figs (Central Asian)	7.00	2333
Figs (Indian)	1.00	333
Almonds (without the shell)	28.00	9333
Almonds (with the shell)	11.00	3667
Pine kernel	8.00	2667
Hazel nuts	2.50	833
Melons	1.00	333
Lotus puff	4.00	1333

Source: *Ain i Akbari*, tr., I, pp. 65-71.

As a gazetteer of information, the *Ain* is unique. There are no works written either before or after the sixteenth century which reproduce price data in the same magnitude. This makes the comparison of the *Ain* prices very difficult. However, there are four commodities for which information is available to the extent of building a reasonably consistent time series of prices prevalent in the seventeenth century, viz. wheat and other items of food, indigo, copper and gold.

While compiling and interpreting such material, the issue of regional price variations has to be kept in mind. Medieval India was a vast country with diverse geographical and economic regions brought together under a single political regime by the Delhi Sultans and the Mughal Emperors. Although territorial unity, commonality of monetary and fiscal regimes and the free movement of goods and services imparted some uniformity to the regions, their individual economic and social experiences were distinct. The fragmentation of the Mughal Empire in the eighteenth century intensified pre-

existing regional diversity by creating independent political and economic entities within the country, each with its own currency system and fiscal regulations.

Table 4

The Price of Wheat: 1595-1708 AD

Year	Place	Rupees per maund of 25.11 kgs.	Remarks
1595	Lahore (Panjab)	0.30	Price rose by 20 %
1611	Surat (Gujarat)	1.03	
1619	Surat (Gujarat)	0.71	
1623	Broach (Gujarat)	0.65	
1627	Surat (Gujarat)	0.67	
1629	Broach (Gujarat)	0.74	
1630	Surat (Gujarat)	6.37	Year of famine
1630	Broach (Gujarat)	4.00	Year of famine
1631	Surat (Gujarat)	5.99	Year of famine
1631	Broach (Gujarat)	6.66	Year of famine
1632	Surat (Gujarat)	6.00	Year of famine
1632	Surat (Gujarat)	4.34	Year of famine
1632	Broach (Gujarat)	3.00	Year of famine
1633	Ahmadabad (Gujarat)	2.54	Year of famine
1634	Surat (Gujarat)	1.67	Year of famine
1635	Surat (Gujarat)	0.94	
1635	Thatta (Sind)	0.94	
1636	Surat (Gujarat)	1.08	
Early 1638	Agra	0.68	
April 1638	Agra	1.31	
May 1638	Agra	2.00	
July 1638	Agra	1.58	
Feb. 1641	Surat (Gujarat)	0.83	

May 1641	Surat (Gujarat)	0.74	
Nov. 1641	Surat (Gujarat)	0.75	
1641	Bengal	0.50	
Jan. 1642	Surat (Gujarat)	0.75	
April 1642	Surat (Gujarat)	0.65	
Nov. 1642	Surat (Gujarat)	1.88	
1643	Surat (Gujarat)	0.83	
1644	Surat (Gujarat)	1.13	
1645	Surat (Gujarat)	0.68	
1659	Pune (Maharashtra)	0.38	
1661	Shahganj (Aurangabad City)	1.04	
1661	Azamganj (Aurangabad City)	1.04	
1661	Begampura (Aurangabad City)	1.04	
1661	Aurangpur (Aurangabad City)	1.05	
1661	Fort Sultangarh (Baglana)	0.97	
1661	Fort Fathabad (Dharwar)	0.75	
1662	Udgir	0.44-0.41	
1665	Amber (E. Rajasthan)	0.99	
1669	Amber (E. Rajasthan)	0.94	
1670	Agra	0.86	Year of good harvest
1671	Patna (Bihar)	1.88	Year of famine
1677	Amber (E. Rajasthan)	0.97	
1681	Balasore (Orissa)	0.60	
1684	Amber (E. Rajasthan)	0.75	
1686	Amber (E. Rajasthan)	1.10	
1688	Amber (E. Rajasthan)	1.01	
1689	Amber (E. Rajasthan)	0.79	
1690	Amber (E. Rajasthan)	0.84	
1694	Surat (Gujarat)	1.42	
1696	Amber (E. Rajasthan)	1.32	
1697	Amber (E. Rajasthan)	0.87	
1702	Lahore	0.86	
1706	Amber (E. Rajasthan)	0.95	
1708	Amber (E. Rajasthan)	1.67	

1708	Delhi	0.38	
1709	Amber (E. Rajasthan)	1.40	
1710	Amber (E. Rajasthan)	1.17	
1711	Amber (E. Rajasthan)	1.83	
1712	Amber (E. Rajasthan)	3.42	
1713	Amber (E. Rajasthan)	1.61	
1714	Amber (E. Rajasthan)	1.55	
1715	Amber (E. Rajasthan)	1.34	
1716	Amber (E. Rajasthan)	1.78	
1717	Amber (E. Rajasthan)	3.68	
1718	Amber (E. Rajasthan)	2.65	
1718	Agra	4.29	Year of Scarcity
1719	Amber (E. Rajasthan)	1.59	
1720	Amber (E. Rajasthan)	2.56	
1721	Amber (E. Rajasthan)	2.58	
1722	Amber (E. Rajasthan)	1.79	
1723	Amber (E. Rajasthan)	1.66	
1724	Amber (E. Rajasthan)	1.38	
1725	Amber (E. Rajasthan)	1.69	
1726	Amber (E. Rajasthan)	1.58	
1727	Amber (E. Rajasthan)	1.12	
1728	Amber (E. Rajasthan)	1.44	
1729	Amber (E. Rajasthan)	1.86	
1730	Amber (E. Rajasthan)	1.92	
1731	Amber (E. Rajasthan)	3.18	
1732	Amber (E. Rajasthan)	1.35	
1733	Amber (E. Rajasthan)	1.57	
1734	Amber (E. Rajasthan)	1.66	
1735	Amber (E. Rajasthan)	1.79	
1736	Amber (E. Rajasthan)	2.12	
1737	Amber (E. Rajasthan)	2.46	
1738	Amber (E. Rajasthan)	1.67	
1739	Amber (E. Rajasthan)	1.66	
1740	Amber (E. Rajasthan)	1.22	

1741	Amber (E. Rajasthan)	1.17	
1742	Amber (E. Rajasthan)	1.95	
1743	Amber (E. Rajasthan)	1.26	
1744	Amber (E. Rajasthan)	1.37	
1745	Amber (E. Rajasthan)	1.08	
1746	Amber (E. Rajasthan)	1.91	
1747	Amber (E. Rajasthan)	2.13	
1748	Amber (E. Rajasthan)	2.01	
1749	Amber (E. Rajasthan)	1.38	
1750	Amber (E. Rajasthan)	1.15	

Source: *Ain i Akbari*, tr., I, p. 65; *English Factories, 1630-33*, p. 209; *1634-36*, pp. 148, 164; *Original Correspondence 1549*, ff. 135-6; *Oxenden Papers 40702*, f. 2a; *Dastur ul amal i Alamgiri*, f. 62b; *Selected Waqai*, pp. 37-8, 108-9, 130, 148-50; Marshall, *Travels*, p. 127; Anonymous, *Tarikh i Bahadurshahi*, tr., Elliot and Dowson, VII, p. 566. Habib, *Agrarian System*, pp. 77, 90-3; Moreland, *Akbar to Aurangzeb*, pp. 170-1; Van Santen, *De VOC*, p. 93; Hasan and Gupta, "Prices of Food Grains", pp. 358-9.

The figures in Table 4 are collected from a variety of sources and belong to different regions. Table 5 presents price figures recorded month-wise for a single region during 1637-39 in a uniform set of documents. These figures come from the accounts book of the Dutch East India Company (VOC) factory at Agra. The employees of the Dutch factory received cash allowances and no records were kept of food items purchased for consumption. However, the factory purchased five items for use as fodder for the horses kept in the stable. Only two years of stable accounts have survived in the *Geleynssen Collection*, but the data they provide are relevant for comparison since these items were used by human beings as well. All prices were originally given in copper money (*paisa*/*dam*) and in the maund of 33.48 kgs. The monthly exchange rates between

copper and silver coins provided in the documents allow us to convert price figures into rupees.

Table 5

Food (Fodder) Prices at Agra: 1637-1639

(Rupees per maund of 25.11 kgs)

1637	**Gram**	**Pulse (*moth*)**	**Barley Flour**	**Clarified Butter (*ghi*)**	**Jaggery (*gur*)**
January	0.75		0.75	7.20	2.40
February	0.75		0.75	6.79	2.26
March	0.75	0.62	0.75	6.35	2.31
April	0.75	0.59	0.75	6.35	2.31
May	0.81	0.84	0.75	6.47	2.35
June	0.81	0.77	0.85	6.23	3.11
July	0.81	0.61	0.82	6.00	3.27
August	0.82	0.82	0.82	6.00	3.27
September	0.80	0.75	0.83	6.11	4.44
October	0.83	0.82	0.82	6.00	4.91
November	0.79	0.75	0.82	6.00	4.36
December	0.82	0.79	1.02	6.00	3.82
1638					
January	0.89	0.85	0.96	6.00	3.27
February	0.96	1.02	0.96	6.00	3.27
March	1.37	1.25	1.23	6.55	3.27
April	1.37	1.50	1.09	8.73	3.27
May	1.54		1.64	8.73	3.27
June	1.64		1.50	6.00	3.27
July	1.64		1.64	8.73	3.27
August	1.64		1.64	8.73	3.27
September	1.50		1.64	6.00	2.73
October	0.94		1.04	6.72	2.59

November	0.94		1.04	6.72	2.59
December	0.94		1.04	6.72	2.59
1639					
January	1.50		1.55	8.28	2.59

Source: Based on Moreland, "Some Side-lights", p. 152; Van Santen, *De VOC*, p. 97.

The monthly variations in prices in Table 5 were probably linked to harvests and supplies. In addition to this, the minor variations in the monthly prices are caused by the fact that they have been converted from copper to silver and the exchange rates of the two coins fluctuated in the market. During 1637, the prices of the first four items remained more or less stable, although there was inflation in the price of *gur* from the middle of the year. As *gur* was extracted and processed from sugar cane, its dearness might have been either due to the failure of the crop or interruption in its supplies to the city. However, in the subsequent year, *gur* prices fell while the prices of the other items increased. This could well have been due to the failure of winter rains and the local spring crop (*rabi* crop harvested in February-April). From the price figures, the year 1638 appears to be one of scarcity. By the middle of the year, grain prices doubled from the previous year. However, a good monsoon seemed to have brought prices down from October, although it can be said, relying on the solitary figure of 1639, that the failure of winter rains once again pushed them up.[27]

[27] Moreland, "Some Side-lights", p. 153.

Table 6

Food Prices at Agra: 1637-1718

(Rupees per maund of 25.11 kgs)

	1595	1637*	1638*	1670	1718
Wheat	0.30	-	0.68	0.86	-
Wheat flour	0.38	-	-	-	4.28
Barley flour	0.28	0.81	1.29	-	-
Gram	0.20	0.79	1.28	0.71	3.87
Pulse (*moth*)	0.30	0.74	1.16	-	-
Pulse (*mung*)	0.45	-	-	-	4.61
Rice (grade I)	2.50	-	-	2.15	6.00
Clarified butter	2.63	6.29	7.14	7.50	15.00
Jaggery (*gur*)	-	3.23	3.06	-	4.61

* Annual average of monthly prices.

Source: Based on Tables 3-5 and Habib, *Agrarian System,* p. 93.

Figures from Tables 3-5 can be extracted to form a broad trend in the overtime movement of food prices in Agra (Table 6). In the absence of any figures for Agra in the sixteenth century, we are constrained to use the prices prevalent in Lahore for comparison, on the assumption that the prices recorded for Lahore in the *Ain* represent the ceiling for those in Agra. This assumption is supported by evidence of cash revenue rates charged by the state in the two regions. These rates, based on local prices, suggest that prices in Agra were higher than Lahore by almost 20 percent.[28] We have argued earlier that the prices recorded in the *Ain* were higher than normal market prices by 20 percent due to the presence of the imperial court.

[28] Habib, *Agrarian System,* pp. 91-2.

Figures in Table 6 demonstrate a marked ascent in the prices of gram (255 percent), wheat (187 percent) and clarified butter (185 percent) by 1670, a year of plentiful harvest. A similar trend is visible in the prices of gram (295 percent), barley flour (189 percent), *moth* (147 percent) and clarified butter (139 percent) up to 1637. The still higher prices of the next year were probably caused by scarcity. The prices of wheat flour and *mung* showed a much steeper hike although it should be remembered that 1708 was a year of scarcity.

Hence, it can be argued that, on average, and with the exception of rice whose price dropped slightly, the prices of food items in Agra almost doubled (193 percent) between 1595 and 1637 and stayed at that level (209 percent) at least till 1670.

The Structure and Movement of Indigo Prices

The commodity for which we have somewhat consistent price figures from a single region is indigo, a commercial product which was used in India and abroad to dye textile. Indigo was produced in the Bayana tract, comprising several villages and their nucleus towns in the province of Agra. The indigo crop was sensitive to extreme weather conditions and short-term movements in its price were caused predominantly by a poor or bountiful harvest.[29] Within each harvest, prices also varied according to the product made out of a particular crop: the best variety fetching the highest price.

[29] Pelsaert, *Remonstrantie*, p.13; *English Factories, 1618-21*, pp. 260, 268; *1637-41*, p. 278; *1646-50*, pp. 62, 276, 322; *1661-64*, p. 320.

Indigo could be bought directly in the villages where it was manufactured to ensure a high degree of quality and low prices.[30] However, there was an established network of local merchants stationed in nearby towns, who advanced money-loans (*dadani*) to the manufacturers in order to secure the bulk of the supplies.[31] Purchases made through the local merchants reflected commissions charged on such transactions. Also, the price of the commodity was highly responsive to demand and there was always the possibility of a rise in markets most frequented by buyers.[32]

Ranging from weather and variety to the market and demand of the manufactured product, there were at least four major factors which went into the determination of indigo prices. Our data reflect some or all of these conditions at one time or other. In order to build a time series of price movements with any degree of uniformity, three categories have been selected representing the highest, lowest and average prices of indigo. The highest and lowest prices are taken from the maximum and minimum prices paid for the commodity in a calendar year. Average prices such as those given in our documents are directly reproduced. Others should be taken to mean simple averages of the various prices at which the commodity was bought. All prices, expressed in different currencies or units of weight, have been converted into rupees and the maund of 25.11 kgs (Table 7). To convey a clear idea of the price movement, all three curves have been mapped in Graph I. The curves show remarkably similar trends which points to the fact that each category of prices is capable of revealing the general trend in indigo prices. In

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[30] Pelsaert, *Remonstrantie*, pp. 15-6; *English Factories, 1624-29*, p. 208.
[31] Pelsaert, *Remonstrantie*, pp. 15-6.
[32] *Ibid*.

order to further minimize the fluctuations and follow the long-term movement amid the short-term peaks and valleys, an index of simple arithmetic averages of the highest prices is worked out for each decade from 1595 to 1675 (Table 8). Price figures in Table 7 have been indexed to the year of normal harvest from which our first quotation is derived (1595). Figures in Table 8 have been also indexed to the first decade of the seventeenth century for which quotations are available.

Table 7

The Price of Indigo: 1595-1697

(Rupees per maund of 25.11 kgs.)

Year	*Highest Price*	*Index 1595 = 100*	*Lowest Price*	*Index 1595 = 100*	*Average Price*	*Index 1595 = 100*
1595	16.0	100.0	10.0	100	13.0	100.0
1609	25.0	156.2	16.6	166	20.8	160.0
1611	28.8	180.0	22.4	224	25.6	196.9
1614	22.2	138.7	17.7	177	19.9	153.0
1615	36.0	225.0	28.0	280	32.0	246.0
1616	35.0	218.7	29.0	290	32.0	246.0
1617	36.0	225.0	28.0	280	32.0	246.0
1621	26.0	162.5	24.0	240	25.0	192.3
1623	40.0	250.0	25.2	252	32.6	250.7
1625	32.0	200.0	28.0	280	30.0	230.7
1626	-	-	-	-	30.0	230.7
1627	36.5	228.0	33.7	337	35.1	270.0
1628	35.0	218.7	32.5	325	33.7	259.6
1629	37.0	231.2	36.0	360	36.5	280.7
1630*	38.0	237.5	-	-	-	-
1634	62.0	387.5	61.0	610	61.5	473.0
1635	63.0	393.7	-	-	-	-
1636	50.0	312.5	45.0	450	-	-
1636	56.0	350.0	45.0	450	50.5	388.4
1637	54.0	337.5	46.7	467	50.3	387.3
1638*	60.0	375.0	58.0	580	59.0	453.8
1639	48.0	300.0	46.0	460	47.0	361.5
1640	40.0	250.0	30.0	300	35.0	269.2
1641	40.5	253.1	-	-	-	-
1642	38.8	242.5	37.8	378	-	-
1643	35.0	218.7	-	-	-	-
1644	33.0	206.2	26.0	260	29.5	226.9
1645	40.0	250.0	37.0	370	38.5	296.1
1646*	42.0	262.5	40.0	400	41	315.3
1647	43.0	268.7	39.0	390	36	276.9
1648*	46.0	287.5	40.0	400	43	330.7
1649	36.0	225.0	-	-	-	-
1654	48.0	300.0	-	-	-	-
1663	38.0	237.5	-	-	-	-
1670	30.0	187.5	-	-	-	-
1697	48.0	300.0	-	-	-	-

* Year of bad harvest.

Source: *Ain i Akbari*, I. 442; Habib, *Agrarian System*, p. 86; Tavernier, *Travels*, II, pp. 7-8; Jourdain, *Journal*, p. 217; *Letters Received*, III. 69-70; IV. 18, 65, 239-41, 327; VI. 234-5, 245, 248-9; *Supplementary Calendar*, p. 109; *English Factories, 1618-21*, p. 86; *1624-29*, pp. 63, 189, 208, 228, 335; *1630-33*, pp. 131, 178-9; *1634-36*, pp. 1, 12, 70, 112, 138, 141, 143, 205-6; *1637-41*, p. 278; *1642-45*, pp. 84, 136, 202, 254; *1646-50*, pp. 33, 62, 76-7, 114, 202, 219, 276, 335; *1651-54*, p. 221; *Factory Records, Surat*, 1, ff. 21, 287; 3, f. 109; 4, f. 141a; 5, f. 192a; 102, ff. 38-9; *Original Correspondence 1656*, f. 214a; *1725*, f. 187a; *1744*, ff. 237a, 424b, 498a, 505a; *1764*, f. 334a; *De Opkomst*, p. 209; Pelsaert,

Remonstrantie, p.15; Coen, *Bescheiden*, 7, ii. 1547-8; *Bronnen*, I. 485, 513-4; *Dagh Register, 1631-34*, p. 326; *1637*, p. 104; *1641-42*, pp. 191, 194; *1644-45*, pp. 231-2; *1663*, p. 310; *Generale Missiven*, I. 528, 530, 620, 724; *VOC, 1135*, ff. 390b, 404a, 513a, 530a.

Table 8

Long-term Movement of Indigo Prices: Decennial Averages

Years	Average of Highest Prices	Index (1595 = 100)	Index (1609-15 = 100)
1595	16. 00	100	57
1596-1605	-	-	-
1606-1615	28. 00	175	100
1616-1625	33. 80	211	121
1626-1635*	36. 63	229	131
1636-1645*	39. 33	246	141
1646-1655	43. 00	269	154
1656-1665+	38. 00	236	135
1666-1675+	30.00	188	107

* Monopoly prices excluded. + Single quotation.

The figures assembled in Tables 7 and 8 show a steady increase in indigo prices in the long seventeenth century (1595-75). The figures in Table 8 reveal that by 1655, prices had risen by 169 percent over the index year of 1595, representing an annual increase of 2.8 percent. Despite a decline in later years, the levels were still 136 and 88 percent above the index year. The increase appears far less spectacular if we focus only on the trend in the seventeenth century. At their peak in the middle of the seventeenth

century, the prices were 54 percent higher. Towards the end of the period, they were only slightly higher than what they were in the beginning.

Within the larger trend, several short phases can be discerned in which prices rose steeply and reached sustainable levels. Some of these ascents can be explained with reference to contingent historical events. In the phase 1595-1629, average prices showed an increase of 180 percent over the highest price prevalent in the index year. It is noteworthy that in the first quarter of the seventeenth century, the indigo market was responding to additional demand from the English and Dutch merchants who had just appeared on the scene as competitors of traditional Indian Ocean merchants dealing in this commodity. Within this phase, a distinct rise occurred in 1615 when indigo prices reached their peak in the last four decades. Following an end to the Mughal conflict with the Portuguese, large quantities of indigo were purchased for export to Iran, Arabia and Europe. Merchant-suppliers quickly responded to the rising demand by raising prices both at Agra and Surat.[33]

The second significant rise took place in 1634 for extra-economic reasons. In this year, the price of indigo was fixed at a very high level (61 to 62 rupees per *maund*) when the sales of the entire kingdom were farmed out to a single merchant by an imperial injunction.[34] The monopoly, attributed to the insatiable greed (*onversaedlijcke begeerlijckheyt*) of the Mughal Emperor, Shahjahan, to profit from a flourishing trade in this commodity, remained in force for a little less than two years.[35] The losses on indigo

[33] Roe, *Embassy of Thomas Roe*, p. 74; *De Opkomst*, p. 209.
[34] *English Factories, 1630-33*, pp. 324-5; *1634-36*, pp. 1, 12, 65-6, 70, 112; *Bronnen*, I, pp. 485, 513-4.
[35] *Generale Missiven*, I, p. 528; *English Factories, 1630-33*, pp. 325, 327-8.

sales in markets such as Iran, where the demand was price elastic, severely hampered the trade.[36] Ironically, the policy designed to bring more income to the state eventually resulted in a reduction of revenue, forcing the emperor to drop the monopoly in 1635 and leave the market open to all buyers.[37] Although prices responded swiftly, they did not drop to pre-existing levels as expected by the merchant-buyers. A clear break in the high prices only came about a few years later (1639-40),[38] possibly due to demand from competing merchants who had waited patiently during all these years.[39] In the subsequent decades, the prices exhibited a stable, slightly upward, trend and the level remained higher than what it was in the first three decades of the seventeenth century.

The sustainable inflationary trend in the price of indigo cannot be denied. Its causes are never directly described in our sources. One factor which appears to have run through the entire course of inflation was effective demand for the product, i.e. demand backed by money supply. When the English and the Dutch first entered the indigo market, there was a sudden increase in its demand which raised prices. European demand continued to grow till at least the middle of the seventeenth century. While quantitative evidence on the export of indigo by different merchant groups is limited, whatever there is indicates a progressive rise in the purchases of the English and the Dutch merchants.[40]

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[36] *Bronnen*, I, p. 485; *Generale Missiven*, I, pp. 448-9; *English Factories, 1630-33*, p. 325.

[37] *Surat Documents*, Supplement Persan 482, f. 98a for Shahjahan's order announcing the abolition of the monopoly. For the imperial order issued to the English and the Dutch see *English Factories, 1634-36*, pp. 138, 141.

[38] *Generale Missiven*, I, p. 724.

[39] *English Factories, 1634-36*, pp. 138, 141-2, 205-6.

[40] *English Factories, 1618-21*, p. 47; *1624-29*, p. 335; *1630-33*, p. 209; *1634-36*, p. 9; Van Santen, *De VOC*, pp. 32-3.

On the other hand, there is also some evidence indicating an increase in the production of indigo in the same period.[41] To the extent that the expansion in indigo cultivation was driven by the pressure of mercantile demand, it would work to offset potential inflationary tendencies although there would still be some upward pressure on prices due to competition among the buyers.

Two other components of the indigo price structure, viz. subsistence cost and fiscal demand, need attention in any investigation of the causes of inflation. On the first, the evidence presented for Agra is instructive in showing that, on average, the prices of food items almost doubled between 1595 and 1637 (Table 6). The inflation in urban food prices would have directly affected the mercantile classes of the city of Agra and the townships in which indigo was processed and sold. If the inflation originated in the rural areas from where supplies came to the townships and cities, it would have also affected indigo manufacturers who were not normally subsistence farmers. The combined effect of the inflation on the cost of subsistence may have driven the price of indigo upwards.

The relationship between fiscal demand and price movement is dialectical: a rise in the prices of taxable items leads to a rise in revenue demand and higher rates of taxation drive prices further up.[42] Between 1595 and 1655, the estimated revenue demand in the provinces of Agra and the neighbouring Delhi increased by 154 percent.[43] If the pressure to enhance the rate of taxation came from the desire of the ruling class to

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[41] Pelsaert, *Remonstrantie*, pp. 13-5; *Generale Missiven*, I, p. 620.

[42] For a rise in indigo prices following higher rural taxation see *Original Correspondence 6490*, ff. 277a-b. Also see *Mirat i Ahmadi*, I, pp. 309, 315 for the reduction in urban taxes leading to a fall in food grain prices.

[43] Moosvi, 'Silver Influx, Money Supply', p. 91 (Table 10).

maximize its resources, it was likely to have contributed to inflation.[44] A detailed study of the dynamic constitution of the Mughal fiscal structure would indeed reveal the nature of the reciprocal relationship between taxation and prices.

Bi-metallic Exchange and Price Movements

With the silver rupee becoming the principal medium of exchange for all major transactions in the seventeenth century, its exchange value against copper and gold coins can be indicative of its general purchasing power. We have sufficient exchange rate quotations in Persian and European sources to allow us to build a time series of the silver price of copper and gold, after making necessary adjustments for the gross weight, intrinsic value and cost of production of the respective currencies. Owing to the unrestricted coinage of the three metals at the mint and the absence of a legal mint ratio, the exchange rates accurately reflect the prices of the three metals in the market.

The current historiography on Mughal prices is circumscribed by difficulties in making precise distinctions between currency denominations and official and market rates of exchange. Although this subject has been dealt with in detail elsewhere, it is important for us to recapitulate the essential points of the argument before we proceed to analyze trends in the silver prices of the two metals.[45]

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[44] For the suggestion of a relationship between higher rent and sixteenth century inflation see Eric Kerridge, 'The Movement of Rent, 1540-1640', *EHR*, 2 Ser., vi (1953), pp. 27-8.
[45] Haider, "Quantity Theory and Mughal Monetary History", pp. 338-44.

W. H. Moreland began his pioneering investigation of money, prices and wages in the Mughal Empire with the assumption that copper appreciated in its value against silver at the turn of the seventeenth century due to its rising demand in the industrial sector and declining supplies from internal sources. Irfan Habib, the distinguished historian of the Mughal economy, arrived at the same conclusion from a different premise. Guided principally by the quantity theory of money, which states that the value of money depends on its quantity,[46] Habib argued that an influx of silver into the Mughal Empire in the sixteenth century depressed the rupee purchasing power of copper as well as gold. Habib was writing at a time when, following Hamilton's stimulating study of Spanish imports and their effects, the European Price Revolution was increasingly understood to be a function of the rising quantity of silver.

This view of the value of silver, common to both Moreland and Habib, shaped their analyses of the movement of prices in two respects. The first relates to the exchange rates of silver and copper coins, i.e. the ratio between the rupee and the *dam*. The second relates to their interpretation of currency denominations in which prices were fixed.

In order to facilitate the transition from a billon and copper regime of the late Delhi Sultans to a tri-metallic system, with silver as the predominant metal, the Mughal chancery created a money of account called *tanka i muradi* (or simply *tanka*) which had a fixed value in copper. Each *tanka* was equal to two standard copper coins of the Mughal

[46] The modern version of the quantity theory, popular with the monetarists, stipulates that, *ceteris paribus*, an increase in the quantity of money causes a proportional increase in the level of commodity prices. For the latest statement of the modern version, see Lucas, "Nobel Lecture: Monetary Neutrality", pp. 661-82. The pre-history of the quantity theory is traced in Hegeland, *The Quantity Theory of Money*, pp. 1-25. Also see Vilar, *A History of Gold and Money*, pp. 163-5.

Empire, known as the *dam* (also called *paisa*) weighing 323 grains. The *tanka* also appears to have had a fixed value in the billon coins of previous mintages which circulated concurrently before getting demonetized. While the relationship between the *tanka* and the *dam* remained fixed throughout the sixteenth and seventeenth centuries, its silver or gold rate continued to fluctuate with changes in market rates of exchange.

Table 9

The Price of Silver Rupee in Copper *Dams* in Northern India

Year	Official Rate (*tankas*/*dams*)	Market Rate (*dams*)
1574	24/48	48
1574-82	24/48	35
1582	20/40	40
1595	20/40	45
1606	20/40	102

Source: Data derived from Haider, "Quantity Theory and Mughal Monetary History", pp. 338-45.

In 1582 A.D., the Mughal state prepared an elaborate schedule of exchange rates in which gold and silver coins of all types (such as those which lost weight and were passed at a discount) were expressed in the copper money of account (*tanka*) at a fixed rate. A silver rupee of full weight was exchanged for 20 *tankas* (or 40 *dams*) and a gold *muhr* for 360 *tankas* (or 180 *dams*). The silver rate of the gold coin was fixed at the same level as in 1574 AD. As a result of this measure – at least in Mughal revenue collections

and salary payments – the real copper coin (*dam*) also became a money of account, since its value was fixed *ad infinitum* against silver and gold. In order to keep the official exchange rates constant, the Mughal state offered additional payments to its officials and their soldiers whenever the market rate rose beyond the official rate.[47]

In the seventeenth century, most exchange rate figures for the copper currency, provided by European merchants, are quoted not in *dams* but in *paisas* ("pice"), the earliest quotation referring to the current rupee to "be worth in agra 102 pices 100, 98 and 96 for the money many times rise and fall" (Table 9). This suggests a remarkable rise in the value of silver against copper, a phenomenon which defies the logic of the quantity theory of money. Moreland, who worked on these figures with the conviction that the value of silver fell against copper in the seventeenth century, found them inconsistent with the official rates supplied in the official chronicle (Table 9) and forced upon the data new definitions of copper denominations. He assumed that the *paisa* (another term used for the *dam*) here denoted the half *dam* (*adhela* of the traditional Indian copper scale) and the *tanka* a *dam*.[48] For easy comprehension, the problem can be re-expressed as follows:

Seventeenth-century scale of copper currencies:

1 *tanka* = 2 *dams* or *paisas* = 4 *adhelas*

1 *dam* or *paisa* = 2 *adhelas*

[47] Haider, "Quantity Theory and Mughal Monetary History", pp. 338-344.

[48] Moreland, *Akbar to Aurangzeb*, pp. 183, 330-1; "Some Sidelights on Life in Agra, 1637-39", pp. 151-2; Pelsaert, *Remonstrantie*, p. 29 (Moreland's note). Hodivala, the doyen of Indian numismatists, writing about the same time as Moreland, concurred with this interpretation. See Hodivala, *Historical Studies in Mughal Numismatics*, p. 140, f.n. 2.

Moreland's reading:

1 *tanka* = 1 *dam* = 2 *paisas*

Subsequent historians, sharing Moreland's conviction as well as his interpretation of Mughal copper currencies, read the data in a manner in which all references to the *tanka* and *paisa* in Persian and European sources stood respectively for the *dam* and the *adhela*.[49] There is no significant evidence, textual or numismatic, to make it necessary to suppose that a new scale of copper currency came into use by transferring the designation of one coin to another. We have already seen that the *tanka* was a double *dam*, and a copper coin weighing 646 grains (double the weight of the *dam*) was indeed minted for a brief period at the turn of the seventeenth century.[50] The doubling of the absolute value of the *dam* inflated the copper price of silver by 100 percent and indicated an inflationary trend in the prices of commodities bought with the rupee.

The Silver Price of Copper

Data in the following two tables have been collected and interpreted afresh keeping in mind the peculiarities of the Mughal currency system and exchange rates. All figures have been converted into the uniform unit of weight which we have adopted for our calculations.

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[49] Habib, "The Currency System of the Mughal Empire", pp. 12, 18 f.n. 2, 19 f.n. 8; "Monetary System and Prices", p. 370 (Table 10); " System of Trimetallism", pp. 149 (Table 3), 156.

[50] Specimens of minted *tankas* are described in the catalogues of museum collections.

Table 10

The Price of Copper in North India: 1575-1680

Year	Place	Rupees per maund of 25.11 kgs.	Index Agra Rate of 1595 = 100	Index Price of 1614 = 100
1575	Agra	21.75	94	212
1582	Agra	26.10	113	255
1582-1595	North India	29.81	129	291
1595	Lahore	26.10	113	255
1595	Agra	23.20	100	227
1606	Agra	10.24	44	100
1614	Agra	10.24	44	100
1615	Agra	12.58	54	123
1626	Agra	18.00	78	176
1637	Agra	19.33	83	189
1637	Khurja	18.64	80	182
1637	Khairabad	16.31	70	159
1638	Agra	18.98	82	185
1638	Agra	18.00	78	176
1639	Agra	18.00	78	176
1680	Agra	18.64	80	182
1680	Agra	17.40	75	170

Source: *Ain i Akbari*, I, pp. 26-7, 28, 176, 178, 196; Mukherjee and Habib, 'Land Rights in the Reign of Akbar', 252; *Dastur Kaikobad Mahyar's Petition*, p. 11, verse 111-3; *Supplementary Calendar*, p. 48, *Letters Received*, III, p. 87; Pelsaert, *Remonstrantie*, pp. 29, 48, 60; Van Santen, *De VOC*, p. 114; *Original Correspondence 1656*, f. 214a; [A Leaf from the Diary of Baz Bahadurchand], p. 259; *Uytrekening*, p. 74.

Table 11

The Price of Copper in Gujarat: 1609-1680

Year	Place	Rupees per maund of 25.11 kgs.	Index Price of 1614 = 100
1609	Surat	13.05	102
1614	Surat	12.28	100
1614	Ahmadabad	12.43	101
1615	Ahmadabad	12.14	99
1615	Surat	12.28	100
1616	Surat	14.91	121
1623	Surat	18.32	149
1627	Broach	20.88	170
1628	Ahmadabad	20.47	167
1628	Surat	21.01	171
1630	Broach	24.28	198
1633	[Surat]	19.70	160
1633	[Surat]	19.33	157
1636	Surat	18.00	147
1645	Surat	22.95	187
1646	Surat	21.98	179
1661	Surat	33.68	274
1662	Surat	32.37	264
1663	Surat	33.14	270
1666	Surat	32.12	262
1669	Surat	32.63	266
c. 1680	Broach	33.14	270
c. 1680	Broach	30.93	252

Source: *Letters Received*, I, p. 34; II, pp. 249-50; III, pp. 11, 87; *Supplementary Calendar*, pp. 46, 62; Van Santen, *De VOC*, p. 114; Algemeen Rijksarchief, *Geleyenssen Coll. 53*; *English Factories, 1624-29*, p. 235; *1634-36*, pp. 164, 206; *1661-64*, pp. 112, 121; Van Twist, tr. pp. 72-3; *Original Correspondence 1656*, f. 214a; B. L., *Oxenden Papers 40702*, ff. 3b, 23b; Thevenot, *Indian Travels*, pp. 25-6; *General Ledgers*, Series L/AG/1/5/2, f. 74; *Uytrekening*, p. 73; *Parwana of Raja Raghunath* [1661], Biblioteca Apostolica Vaticana, MS Vat-Persiano 33.

Our data suggests two phases in the silver price of copper. In the first and shorter phase, there was a 20 percent rise in northern India from 1575 to 1595 (no data is available for other parts of India). There can be two explanations for this: abundant supplies of silver into the Mughal Empire and a corresponding decline in copper imports.

The internal supply of copper from the mines of central India and its imports from Europe by the Red Sea sustained the copper currency sector in the first half of the sixteenth century.[51] In the second half, silver substituted copper in imports via both the Red Sea and Cape routes.[52] The contraction in copper supplies allowed silver to replace it in sectors such as the urban and intermediary markets which were tied to commodity production and foreign trade. With silver yet to penetrate the rural sector and copper imports totally stopped, its relative value was bound to be affected. Even in the midst of fiscal efforts to encourage silver payments, the rupee-dam ratio once dipped to 1:35 (from 1:40) between 1582 and 1595, apparently when Mughal military officials and their soldiers carried out their expenditures in rupees.[53] However, with the state actively encouraging payments in silver, its market expanded fast at the expense of copper. Mint organization, the bullion market and currency measures played an important role in facilitating this process.

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[51] Aubin, "Albuquerque et les negociations de Cambaye", 44, 60; Magalhaes-Godinho, *L'Economie de l'Empire Portugais*, pp. 403-4. For the export of Hungarian and probably Central Anatolian copper to India by Yemen see Kafadar, "Les Troubles Monetaires", p. 384, f.n. 11. European copper was also carried to India from Mamluk Egypt in the fifteenth century. Bacharach, "Circassian Monetary Policy: Copper", pp. 42-3.

[52] Haider, "Precious Metal Flows", pp. 300-23.

[53] For the seventeenth century we have evidence that wide fluctuations in the exchange rate of silver coins occurred 'when the kings and nobles soldiers are paid at [the] garrisons'. *Factory Records, Hugli*, 10, f. 208.

In the second and longer phase, beginning some time after 1595 and stretching to the end of the seventeenth century, there was a secular fall in the silver price of copper. There is nothing in our sources to account for this phenomenon. In all likelihood, it was the result of the growing demand of silver and, more importantly, the creation of a vast stock of demonetized copper which was available to the market at a time when there was no large-scale absorption of the metal in the industrial sector.

The steady depreciation in the value of copper, combined with a rise in the monetary demand of silver, precipitated the displacement of copper coinage when prices began to be quoted in rupees. In commodity markets, sellers were hardly expected to benefit by exchanging the *dam* for rupee if they had to make investments or spend in silver money. For the state officials, salaries stated in copper would have now yielded even less in terms of silver than before at the official rate of exchange. The state, therefore, must have been under great pressure from its functionaries to snap the link which it had maintained between the salary figures and the copper money of account. This could be the reason behind the decision to frame new salary figures in rupees towards the end of the sixteenth century.[54] In the seventeenth century, revenue demand too came to be expressed in silver rather than copper money.[55]

If we isolate and examine the trend in the silver price of copper in the seventeenth century, the picture appears quite different. In the seventeenth century, there was a steady upward movement in the price of copper and by the third quarter of the seventeenth century, it had risen by 70 percent in north India and 152 percent in Gujarat.

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[54] *Ain i Akbari*, I, pp. 180-85.

[55] Habib, "System of Trimetallism", p. 151.

The inflation came about in two stages. In the first, the price of copper stabilized and rose in the 1620s, when a policy of minting copper on an apparently large scale followed its renewed demand as a currency metal.[56] At the same time, there was a substantial increase in the circulation of the rupee partly as a result of imperial expenditures conducted in that specie and partly due to the establishment of an important mint at Surat in Gujarat.[57]

Table 12

Dutch Imports of Japanese Copper to Gujarat

Years	*Quantity in Dutch Pound*	*Quantity in Metric Tons*
1645-1654	730,794	361.7
1655-1664	3,302,085	1632.6
1665-1674	4,123,096	2038.5
1675-1684	7,134,785	3527.6

Source: Glamann, "Dutch East India Company's Trade in Japanese Copper", pp. 64-5.

[56] Jourdain, *Journal of John Jourdain*, p. 150; *English Factories, 1618-21*, pp. 142, 144

[57] A mounting deficit in the imperial income forced the Mughal Emperor, Jahangir, to draw upon the silver hoard left by his father, Akbar (100 to 130 million rupees), to the extent that only 10 million rupees were left in the treasury. The impact of this enormous injection of silver into the economy, indicated neither by bullion imports nor mint output figures, is unknown, but it is important to note that it took place at a time when the purchasing power of silver declined both against copper and gold (see below). Qazwini, *Badshahnama*, ff. 444-5; MS Or. 173: f. 221b; Khan, *Maasir al Umara*, pp. 814-5.

Copper prices peaked in the mid-1650s, when, given the fixed demand for copper coins in the wage sector (see below), a significant fall in mine production forced its silver price to reach an all-time high.[58] As a result of the rise in its silver price, copper imports into the empire were encouraged over and above the normal quantities brought in by the merchants. There was a spectacular increase in Dutch imports of Japanese copper to Gujarat in the second half of the seventeenth century (Table 12), although they appeared to have had a limited impact on its regional price till at least 1669.[59]

The Price of Gold

The silver price of gold can also be derived from quotations of exchange rates between the rupee and *muhr* (gold coin of 169 grains and 99 per cent fineness) and the quantity of fine gold purchased with each *muhr* in the market. Owing to the relatively low cost of transporting gold, regional variations in its rupee price may be considered to be minimal. Thus, price figures from different parts of India have been converted into uniform weight and tabulated in a single time series.

[58] Waris, *Badshahnama*, f. 488a; Habib, *Agrarian System*, p. 442.
[59] *Parwana of Raja Raghunath* MS Vat-Persiano 33 (unfoliolated).

Table 13

The Price of Gold in India: 1575-1697

Year	Rupees per maund of 25.11 kgs.	Index (1595 =100)	Year	Rupees per maund of 25.11 kgs.	Index (1595 =100)
1575	18, 943	100	1658	33, 676	178
1582	18, 943	100	1661	31, 046	164
1595	18, 943	100	1662	32, 624	172
1608	16, 838	89	1664	31, 572	167
1611	21, 048	111	1666	33, 676	178
1614	21, 048	111	1670	32, 098	170
1615	22, 437	118	1671	31, 572	167
1620	21, 048	111	1675	29, 993	158
1621	21, 048	111	1677	28, 941	153
1626	29, 467	156	1678	27, 152	143
1628	28, 057	148	1679	27, 089	143
1633	26, 310	139	1680	27, 152	143
1636	27, 152	143	1683	26, 310	139
1640	27, 362	144	1684	26, 310	139
1642	29, 467	156	1688	25, 257	133
1645	29, 467	156	1695	27, 888	147
1652	29, 467	156	1697	27, 636	146
1656	30, 519	161			

Sources: *Ain i Akbari*, I, pp. 25, 27-9, 196. Mukherjee and Habib, "Mughal Administration and the Temples of Vrindavan", Doc. no. 2, p. 293; Hawkins, *Early Travels*, pp. 101-2; Pelsaert, *Geschriften van Francisco Pelsaert*, pp. 116, 252, 275-6; *Remonstrantie*, pp. 7, 29; *Generale Missiven*, I, p. 341; Lahori, *Badshahnama*, II, pp. 259, 396; Mamuri, [Continuation of the] *Shahjahannama*, f. 134b; *Factory Records, Surat*, 4, ff. 116a, 161b; 90, ff. 94a-b; *English Factories (NS)*, III, p. 240; Careri, *Indian Travels of Thevenot and Careri*, p. 253; [*The English Factory at Surat, Persian Correspondence : 1695-7*], f. 63b.

It is important to remember that the quotations we have for the sixteenth century are for the official price of gold. Even though the price of gold remained stable for two decades, there is a strong possibility that it fluctuated in the open market. Much like copper, the silver price of gold also fell between 1595 and 1608. Thereafter, the price of gold surged substantially, reaching its first peak in 1626. Although the available sources do not directly comment on the causes of this inflation, it seems to be related partly to imperial expenditure carried out in silver and partly to higher demand of gold induced by the minting of zodiacal coins.[60]

Between 1626 and 1640, the silver price of gold fell. Contemporaries attributed this to a fall in the demand for gold and a rise in that for silver. The first was triggered by widespread speculation that the new king would be distributing gold as well as expectations of larger imports from the Red Sea.[61] Imperial finance was also responsible for raising the demand for silver. In 1632, a Dutch factor informed us that "gold had fallen…in relation to its silver price due to the fact that Shahjahan was more inclined to amassing silver."[62] Our sources record that there was little silver left in the treasury when Shahjahan inherited it, and he had to take strong measures to enhance the imperial income by reducing expenditure and bringing in more silver into the coffers.[63]

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[60] For zodiacal coins see, Pelsaert, *Remonstrantie*, p. 29; *English Factories, 1624-29*, p. 235.

[61] *English Factories, 1624-29*, p. 235.

[62] *Generale Missiven*, I, p. 341. 'It is nothing but [silver] money which the king seeks and [in this] is followed by all his big and small nobles'. Algemeen Rijksarchief, *VOC, 1092*, f. 280a cited in Van Santen, *De VOC*, p. 104.

[63] 'From the beginning of his reign to the end of the 20th regnal year, Shahjahan brought 37 crore [370 million] rupees into his treasury (*khazana*)'. Khan, *Shahjahannama*, f. 76b. Also see Qazwini, *Badshahnama*, MS Add. 20734, ff. 444-5.

The cheapness of gold caused merchants to import it in lesser quantities. Also there was an urge to bring additional silver in order to convert it into reserve gold to make payments for goods purchased in the Deccan.[64] The import of Chinese gold by the Dutch also ceased during the early 1640s.[65] The cumulative effect of a decline in the supply of gold was an initial stability and a subsequent rise in its price till it reached an all-time high in 1658.[66]

Table 14

Price of Japanese gold *kobans* in rupees

Year	Rupees per *koban*	Place	Index (1669 = 100)
1669	20	Bengal	100
1671	19.6	Bengal	98
1674	19.5	Bengal	98
1675	18.0	Bengal	90
1676	17.5	Bengal	88
1679	16.6	Surat	83
1680	16.5	Bengal	83
1683	16.6	Surat	83

Sources : *Factory Records, Miscellaneous*, vol. 3, pp. 122, 123, 167; *Generale Missiven*, IV, pp. 8, 69, 91, 114, 144, 424; *Factory Records, Surat*, vol. 4, f. 89a; vol. 5, f. 80a; Prakash, *Dutch East India Company and the Economy of Bengal*, p. 132.

[64] *English Factories, 1634-36*, pp. 211-2.
[65] *English Factories, 1642-45*, p. 145.
[66] Mamuri, [Continuation of the] *Shahjahannama*, f. 134b.

A crash in gold prices occurred in the 1670s in most parts of the Mughal Empire. European merchants indicated in their reports that the price of both the specie and uncoined gold started to fall from 1674.[67] Merchants suffered losses on the sale of gold and the quantities imported from the Red Sea and Persian Gulf only added to their ongoing misery.[68] The same severe collapse was apparent in the rupee price of the Japanese gold coin, *koban* (Table 14). The *kobans* were brought at a time when gold was apparently commanding a favourable price in India and, due to the wars in Europe, the Dutch Company had no silver to supply from Amsterdam.[69]

The reason for the crash appears to have been an acute short-term scarcity of silver.[70] It also appears that the shortage was the result of a decline in the import of European-American silver from the Red Sea and Persian Gulf.[71] A recent study of Spanish records reveals a sudden drop in American silver arriving in Spain in the 1670s and this is supported by the trend depicted in Morineau's overall estimates. Spanish records also point out that in order to make up for the lack of silver, the "annual plata fleet was importing gold in surprisingly large scale".[72]

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[67] *Factory Records, Surat*, 107, ff. 41, 90; *Generale Missiven*, IV, p. 8.

[68] *Letterbook of Issac Lawrence*, ff. 54a, 63b; *Factory Records, Surat*, 4, f. 116a, 161b; 90, ff. 94a-b; *English Factories (NS)*, III, pp. 240, 270.

[69] Glamann, *Dutch Asiatic Trade*, pp. 58, 63; Gaastra, "The Dutch East India Company and its Intra-Asiatic Trade in Precious Metals", pp. 103-4.

[70] *Factory Records, Surat*, 107, f. 41. *Original Correspondence 4062* cited in Chaudhuri, *Trading World of Asia*, p. 179; *Generale Missiven*, IV, p. 8.

[71] *Generale Missiven*, IV, pp. 8, 69, 91; *English Factories (NS)*, I, p. 121; III, p. 228.

[72] Chaudhuri, 'World Silver Flows and Monetary Factors", pp. 70-1; Morineau, *Incroyables Gazettes et Fabuleux Metaux*, p. 564.

Table 15

Exports of Japanese Kobans by the VOC: 1670-1679

Years	*Number of Kobans*	*Value in florins 1 tael = 2. 85 fl.*	*Fine gold in kgs.*	*Index 1670 =100*
1670	58433	965897.49	913.89	100
1671	107241	1772693.73	1677.25	183
1672	69207	1341231.66	1082.40	118
1673	17705	343122.90	276.90	30
1674	50567	979998.15	790.87	86
1675	41073	795994.74	642.38	70
1676	19989	387386.82	312.62	34
1677	29760	576748.80	465.44	51
1678	-	-	-	-
1679	22172	429693.36	346.77	38
Total	-	7592767.65	118,750.88	-

Source: Nachod, *Die Beziehungen der Niederlandischen Ostindischen Kompagnie zu Japan*, p. CCVII (Table D)

Note: The original figures are given in number of *kobans*, each of which contained 15.64 grams of pure gold. Van Dam, *Beschryvinge*, I, ii, p. 92.

The scarcity of silver affected the prices of all commodities, including European copper which fell from 30 rupees in 1671 to 23 rupees (per maund of 25.11 kgs) in 1678.[73] Gold suffered especially in this period because of continuous imports from both Europe and Asia, particularly during 1665-1672 (Table 15).[74] At the same time, the lack

[73] Factory Records, OIOC, SeriesG/40/2, f. 158; G/40/4, f. 20.

[74] For the argument that this crash was caused by Indian imports of gold from Japan and Europe, see Habib, *Agrarian System*, rev. ed., p. 438.

of silver money induced gold to be brought out of reserves and hoards from within the Empire to make up for the shortfall in the monetary stock.[75] With more and more gold entering into circulation, its downhill slide continued well after the crisis of silver was over. Gold could not recover much of its lost esteem in the subsequent decade and continued to fetch a low price till 1697.

Across the different phases, a sustained rise in the price of gold can be observed in the seventeenth century. The price level had reached 78 percent at its peak by the mid-seventeenth century from the index year of the late sixteenth century. Towards the end of our period, it had risen by 46 percent. Indexed to the year 1614, the increase was of the order of 60 and 32 percent respectively. For both index years, the rise was slightly higher if our comparison begins from 1608, the year for which we have the first unofficial exchange rate.

The point which needs to be considered is whether the secular inflation in gold was due to an increase in its demand or whether it was a function purely of the silver influx. We know that gold was hoarded in the Mughal Empire for asset accumulation and ceremonial gift-giving. With an increase in the use of silver as money and a fall in the premium of the *muhr* (after a reduction in seigniorage), the tendency to convert gold into ornaments and other craft objects may have been strengthened.[76]

On the other hand, the possibility that the steady rise in the rupee price of gold encouraged an opposite tendency cannot be entirely ignored. There is evidence that a fall

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[75] *Original Correspondence 4258;* Foster, "Aurangzeb and the Treasure Hoard of Akbar", pp. 314-5; *English Factories (NS)*, I. 267-8 for a summary.
[76] Habib, "Monetary System and Prices", p. 365.

in the gold price of silver led to an increase in the minting of the cheaper metal for the reason that hoarders and spenders could expect to get more silver coins out of the same amount of gold as before.[77] However, as the century progressed, gold minting declined in the Mughal Empire, suggesting that monetary demand for the metal was always limited This was well brought out in the events of the 1670s when a spurt in gold circulation failed to compensate for the contraction in silver money to overcome the crisis of liquid cash.

We know very little about the long-term demand for gold in the non-monetary sector. But we know that such demand existed throughout the seventeenth century. On numerous occasions, a sudden increase in the import of gold depressed its silver price in all the commercial centres. But as soon as the surplus gold was drawn into the shops of the money-changers and goldsmiths or was purchased by the nobility, its value stabilized. With the import of gold more or less steady throughout the seventeenth century and the possibility of its higher absorption into the non-monetary sector, we need to factor in the demand side of the equation as well to account for the inflation.

Towards a Conclusion

Data for the period 1200-1526 is so limited and fragmentary that we can neither build a time series nor compare it with a later period. The limited data we have for the sixteenth century also do not allow us to build a price series of any sort or to speculate about a

[77] Steuart, *Collection of Miscellanies*, p. 4; Daniell, *Gold Treasure of India*, p. 101.

movement of any kind. Between 1575 and 1582, silver depreciated against copper and it is possible to argue that it lost its value against other commodities or affected prices expressed even in copper. The Spanish monetary system was based on copper during the course of the price revolution. The demand for silver money and its displacement of copper in the last quarter of the sixteenth century not only stabilized the value of the rupee but raised it substantially against copper and gold. If a dual pricing system prevailed in the Mughal Empire during this phase of transition then all prices expressed in silver would have the tendency to fall even if there were no changes in the copper prices of marketable goods.

Table 16

Price Trend in the Seventeenth Century: Terminal Date 1680 AD

	Food Items	**Indigo**	**Copper**		**Gold**
			N. India	**Gujarat**	
1595 = 100	209	188	75	-	146
1614 = 100	-	107	170	252	132

One issue in the study of price movements in the seventeenth century is the choice of the right date to anchor the variables. If we begin our comparison from 1595, for which the data are quite substantial, we get the unmistakable impression of inflation in the prices of all four items selected for study. The hike was the highest for food items,

followed by indigo, copper and gold ((Table 16). If we move the index year to 1614 and confine our analysis to the seventeenth century, we observe inflation of a lesser magnitude in the prices of two items, viz. copper and gold. In the case of indigo too, the inflationary trend is visible till 1655, after which prices began to fall, almost to the level of the index year.

The other important issue is whether or not Mughal prices experienced the Hamilton effect. We do know that there was an influx of silver in the Mughal Empire from the 1550s which reached a very high level at the turn of the seventeenth century. We also know that a large amount of imported silver was minted and put into circulation. What we do not know is whether there was any increase in the total volume of money to the extent that it exceeded the amount required for meeting transaction demand. Current estimates of money supply require some revision for the reason that the index years chosen to measure the magnitude of currency output were those of massive re-coinage and largely represent a recycling of the extant currency rather than real additions to the monetary stock. Moosvi's figures are logically accurate for measuring the long-term rise in silver money after 1615 when the effects of the extraordinary phase of re-coinage were over. However, here too the introduction of hoarded silver into the economy during 1622-27 has to be taken into account as well as the regional distribution of money in specie and credit papers.

Wages in Medieval India

In the subsistence-oriented economy of medieval India, payments were made to village workers and artisans from a common pool and it appears that there was no formal conceptualization of such payments as wages. Many artisans held revenue-free lands granted to them by the village community in lieu of the services they performed.[78] One could ask the question whether the revenue due to the state on such holdings constituted artisans' wages. If this was the case, the state might have subsidized the costs of wage-labour in the countryside by granting revenue concessions on land held by the village community for such purposes. Micro-level research on the identification and computation of rural wages will not only establish the incomes of the rural classes with greater certainty but improve our understanding of village economic organization (hitherto ascribed to the realm of autarchy and self-sufficiency) and the triangular relationship between the state, village community and rural labour market.

Wages in the Delhi Sultanate

With an increase in monetary circulation, it is logical to assume that wages took on money form on a bigger scale than before. This phenomenon is borne out by scattered references to urban wages in Persian sources from the thirteenth century and both in Persian and European sources from the sixteenth century (see Tables below). Figures for

[78] Habib, *Agrarian System of Mughal India*, pp. 156-8.

wages are once again very limited for the Delhi sultanate (Table 17) and it has to be remembered that during 1296-1316, wages too were regulated along with prices in order to keep the level of subsistence unchanged. If Barani's statement that six *jitals* worth of bread and meat-stew sufficed for a family of seven or eight persons is true,[79] then the daily wages of an ordinary artisan or domestic servant could purchase just enough food for a small family of two to three persons. Similarly, a tailor or a weaver had to deliver at least one finished product to his clients per day in order to subsist.

Table 17

Daily and Piece Wages in the Delhi Sultanate: 1296-1316 AD

(Wages in *jitals*)

Category of workers	**1296-1316**	**1350s**	**Remarks**
Artisan	2-3		Annual wage 14.5 *tankas*
Domestic servant	1.66		Annual wage 12 *tankas*
Weaver	2		For weaving a sheet
Tailor	2	24	For stitching a robe

Source: Barani, *Tarikh i Firozshahi*, p. 385; Habib, "Non-Agricultural Production and Urban Economy", pp. 87-9.

Since the price-control system of Alauddin was aligned with the cost of subsistence, its collapse resulted in a sharp rise in wages. This is affirmed by qualitative evidence and corroborated by the solitary figure we have for the 1350s. In the fifteenth century, the trend was reversed due to a fortuitous combination of successful harvest and paucity of precious metal coinage. In the early sixteenth century, a Persian chronicler

[79] Habib, "Non-Agricultural Production and Urban Economy", p. 87.

marvelled at the ability of wage earners to purchase goods and services in abundance and attributed this to a configuration of factors both divine and human:

> One of the most extraordinary phenomena of Sultan Ibrahim's time [1517-26] was that corn, clothes, and every kind of merchandize were cheaper than they had ever known to be in any other reign, except perhaps in the time of Sultan Alauddin Khilji; but even that is doubtful. Moreover, in the time of the latter, the cheapness was occasioned by every kind of disgusting interference and oppression and by a hundred thousand enforcements and punishments; whereas the cheapness of this reign was occasioned by abundant harvests. In the time of Sikandar [1489-1517], also, the markets were very cheap, but still not so much as in the time of Ibrahim. Ten *mans* of corn could be purchased for one *bahloli* [a copper coin]; five *sirs* [40 *sers* = 1 *man*] of clarified butter, and ten yards of cloth, could be purchased for the same coin. Everything else was in the same exuberance; the reason of all which was, that rain fell in exact quantity which was needed, and the crops were consequently luxuriant, and produce increased ten-fold beyond the usual proportion. The Sultan had likewise issued an edict that his chiefs and nobles of every degree should take nothing but corn in payment of rent, and no money was to be taken from cultivators on any account. The consequence was, that countless quantities of grain accumulated in several *jagirs* [revenue assignments], and as ready money only was necessary for maintaining the personal expenses of the nobles, they were eager to sell their grain at any price which was procurable. The abundance of God's blessings reached such a height that ten *mans* of corn would sell for a *bahloli*. Gold and silver were only procurable with the greatest difficulty. A respectable man with a family dependent on him might obtain wages at the rate of five *tankas* a month. A horseman received from twenty to thirty *tankas* as his monthly pay. If a traveller wished to proceed from Delhi to Agra, one *bahloli* would, with the greatest ease, suffice for the expenses of himself, his horse, and escort.[80]

The general impression that one gains from the above passage is that people were better off at the turn of the sixteenth century. Unfortunately, the units of currency and

[80] Abdullah, *Tarikh i Daudi*, pp. 104-5; tr. Elliot and Dowson, *History of* India, 4, p. 476.

weight used in the passage cannot be compared with the previous ones for the simple reason that the *tanka* now was a billon coin and the physical weight of the maund is not known.

Wages in the Mughal Empire [81]

For the Mughal Empire, we are less constrained by the paucity of source material on wages. Wage data are available in the *Ain* and other Persian sources as well as European records. Time and piece wages of unskilled and skilled workers are derived from the *Ain* and assembled in Tables 18 and 19. Originally stated in copper *dams*, the figures have been converted into rupees. Figures of daily rates in Table 18 have been converted into monthly rates.

Table 18

Monthly Wages of Construction Workers in Rupees: 1595 AD

Category of Workers	I class	II class	III class	Unclassified
Lime worker	5.25	4.50	3.75	
Carpenter	5.25	4.50	3.00	
Bricklayer	2.63	2.25		
Bamboo- cutter				1.50
Water-carrier	2.25	1.50		

[81] The present section draws upon my paper "Structure and Movement of Wages in the Mughal Empire", *Wages and Currency: Global and Historical Comparisons*, ed. Jan Lucassen (forthcoming).

Wood-sawyer				1.50
Thatcher				1.50
Ordinary Labourer				1.50

Table 19
Piece Wages Paid in the Mint: 1595 AD

Category of Wage Earners	**Wages in rupees for crafting 1000 coins of:**		
	Gold 169 grains/10.95 grams	**Silver** 178 grains/11.54 grams	**Copper** 323grains/20.93 grams
Blank-cutter	5.26	1.34	0.5
Silver smelter-assayer		1.35	
Weigher	0.44	0.14	0.01
Coiner and hammerer*	0.35	0.14	0.08

*The hammerer received one sixth of the total paid to the coiner

Source: Abul Fazl, *Ain i Akbari*, I, pp. 16-18.

It is difficult to compare the figures in Tables 18 and 19 for the reason that we do not know the daily workload of a mint artisan. Something, however, can be said about how skills were weighed by employers when formulating payments. In Table 19, the higher wages paid to the blank-cutter were due to the delicate nature of his job which demanded exactitude, as all blanks had to be cut with shears to an equal size and weight. In the case of precious metals, greater precision and time were also required to weigh the blanks on a fine balance. Compared to the silver weigher, the workload of the gold

weigher for one thousand coins was higher because gold was weighed in smaller batches. Similarly, the job of the coiner was to fix and align the dies (Mughal dies were not pegged), place the blanks between them, examine the impressions formed on the obverse and the reverse, and prevent slipping, over-striking and cracking of the edges of the coin. In addition, he was required to provide the hammer and supervise the repair of the upper and lower dies. The operation demanded more skill and responsibility than the hammerer whose job was to strike the blow with measured strength at the instruction of the coiner. Thus, no separate allowance was made for the hammerer at the mint and he received a share of the wages paid to his superior partner.[82]

Wages Paid in the Military Establishment

In the Mughal military establishment, the responsibility for maintaining soldiers, war-animals and servants was delegated to rank-holding officials of the state (*mansabdars*) on the basis of guidelines issued by the imperial administration. The officials held a dual rank (*mansab*). Their personal rank (*zat*) denoted their position in the administrative hierarchy by a number (5,000 *zat*, for instance), and their obligation to maintain soldiers and war animals in their personal contingent (*khasa*). Their military rank (*sawar*) determined the number of cavalry troopers (*tabinan*) they were expected to bring to muster (5,000 *sawars*, for instance). The *mansabdars* received separate salaries and allowances for *zat* and *sawar* in accordance with their personal ranks, ethnic groupings,

[82] Abul Fazl, *Ain i Akbari*, I, p. 18; Van Dam, *Beschryvinge*, II, iii, pp. 108-9; *Kaghzat i Mutafarriqa*, folios, 57r, 58v-r; Bihari, *Hidayat ul Qawaid*, folio 14r (Irvine, p. 150).

the number of cavalry troopers they theoretically maintained or brought to muster and the number and quality of horses (both *khasa* and *tabinan*). For instance, soldiers serving under Mughal and Iranian *mansabdars* were paid, in the last quarter of the sixteenth century, at the pre-muster (*barawardi*) rate of 25 rupees per month. Soldiers of Indian *mansabdars* were allowed 20 rupees per month.[83] It was out of these salaries and personal allowances that the wages of the labour force employed in the military sector were paid. Abul Fazl has provided figures (Tables 20-21) for the wages paid to servants tending the personal horses and elephants of the *mansabdars* as well as the horses of their cavalry troopers (soldiers were not permitted to keep elephants).

Table 20

Monthly Wages Paid to the Groom for Tending Horses: 1574-75 AD

Breeds of Horses	**Wages in Rupees**
Iranian and Turkish	
Arab	1.58
Iraqi	1.58
Mujannas	1.50
Turki	1.50
Indian	
Yabu	1.13
Tazi	1.13
Jangla	1.13

Table 21

Monthly Wages of the Attendants of the Elephants: 1574-75 AD

[83] Abul Fazl, *Ain i Akbari*, I, p. 175; Habib, "Mansab System", p. 234.

Category of Servants	Types of Elephants and Wages in Rupees		
	Mast	Shergir	Sada
Driver (*mahawat*)	3.00	2.63	2.25
Assistant I (*bhoi*)	2.25	1.88	1.50
Assistant II (*meth*)	2.25	2.25	1.50

Source: Abul Fazl, *Ain i Akbari*, I, pp. 176-8.

Wages Paid in the Service Sector

A large service sector was maintained by the Mughal nobility and other wealthy social groups in the urban centres. It comprised mainly domestic servants and other unskilled workers who were employed on a monthly basis (lunar month of 29 days) in the seventeenth century and who were mostly paid in rupees (Tables 22 and 23).

Table 22

Monthly Wages of Peons and Domestic Servants: 1613-89 AD

Year	Place	Category of Wage Earners	Wages (Rupees)
1613	Agra	Lowest wage (Imperial Establishment)	3.00
1616	Surat	Domestic Servant	2.66
1622	Agra	Peon	4.00 *
1623	Surat	Domestic Servant	3.00 **
1623	Agra	Porter	4.00
1626	Agra	Domestic Servant	3.00-4.00

1634	Surat	Peon	2.22-3.11
1636	Surat	Peon	3.55-4.44+
1636	Ahmadabad	Peon	3.55-4.44+
1637	Agra	Peon	3.00-3.50
1659	Ahmadabad	Peon	4.00
1689	Surat	Peon	4.00

* Rate quoted as "high"

** With food and clothing

\+ Year of famine

Sources: Hawkins, *Early Travels in India*, p. 99; *Supplementary Calendar*, p. 66; *English Factories in India*, *1622-23*, pp. 94, 222; *1634-36*, p. 151; Della Valle, *Travels of Pietro Della*, I, p. 42; Pelsaert, *Remonstrantie*, p. 62; *Geleynssen*, 123; *Factory Records, Miscellaneous*, vol. 3, folio 133; Ovington, *Voyage to Surat in the Year 1689*, p. 229.

Table 23

Monthly Wages Paid to the Servants of the Dutch Factory at Agra: 1637 AD

Category of Employees	**Wages in Rupees**
Washer man	5.0
Groom	4.5
Servant of chief factor, Geleynssen	4.5
Torchbearer	4.0
Servant of factor, Barentsen	3.5
Chariot driver	3.5
Gatekeeper	3.5
Peons	3.5*
Luggage boy of Geleynssen	2.5
Keeper of the graveyard	2.0
Writer of letters in Persian	0.5
Barber	0.5

* Each

Source: *Geleynssen Collection*, no. 123.

The Movement of Wages in the Mughal Empire

The market value (purchasing power) of wages received in money could rise and fall with fluctuations in the level of prices of both commodities and currencies. Ever since Earl J. Hamilton co-related money-wages with prices in his treatment of "profit inflation" and capital accumulation during the Industrial Revolution, the study of wage movements has assumed added significance. For the first time, at least in modern historiography, the power of money to bring about major changes in economic and social structure was persuasively espoused. However, Moreland, in his classic study of Mughal economic organization, found no noticeable change in wage levels and took this to be a sign of stagnation.[84] We argued earlier that the doubling of the absolute value of the *dam* by Moreland not only inflated the copper price of silver by 100 percent but depressed all wages stated in copper currency. Thus, while the daily wages of an unskilled labourer more than doubled between c. 1595 and 1637 (from 2 *dams* to 6.5 *paisas*), Moreland saw no substantial change because he considered the latter figure to be equivalent to 3.25 *dams* (see the reading of the copper scale by Moreland). It is noteworthy that the figures quoted in rupees in Table 24 reflect the movement of money wages more accurately than those stated in copper due to an extraordinary depreciation in the exchange value of the latter.

[84] Moreland, *From Akbar to Aurangzeb*, pp. 173, 178, 194-195.

Table 24

Money Wages of Unskilled Labourers in Agra

	1595	**1613**	**1637**
Daily wages in *dams*	2.0	10.6	6.5
Monthly wages in rupees	1.5	3.0	3.5

Note: 1 rupee = 102 *paisa* / *dam* in 1614 and 54 in 1637.

The wages paid to skilled mint artisans similarly rose steeply in the seventeenth century although the comparison here involves two separate regions (Table 25). The wages of mint workmen were usually stated in proportion to the amount minted since they were not actively employed round the year and were called upon to work only when the mint functioned regularly. At all other times, it was customary for them to receive a subsistence allowance, apparently designed to keep skilled workers under contractual obligation, since such workers were not easily available everywhere and at all times.[85] There is evidence of local administrators controlling the movement of mint workers and often employing coercion to keep them tied to a particular mint.[86]

[85] *Factory Records, Surat*, 94, folios 39v, 58v.
[86] *Ibid*., folios 28v, 93r.

Table 25

Money and Real Wages of Blank-Cutters for 1,000 Silver Coins

Year	Wages (rupees)	Quantity of Wheat (kgs)	Mint
1595	1.34	112.0	Lahore
[1676]	4.00		Surat
1694	4.50		Cambay
1694	5.00	88.5	Surat

Sources: References cited in footnotes 87-89.

From evidence available to us for the late sixteenth century, the *zarrabs* (blank-cutters) were paid for the period when they were at work. These were given as 53.44 *dams* (1.34 rupees at the official rate of exchange) for minting a thousand silver coins.[87] By 1694, when the English needed workmen for their Bombay mint who could only be recruited from Gujarat, the *zarrabs* at Cambay asked for 6 rupees per month as "diet" money and 4.5 rupees per thousand silver coins they crafted.[88] The *zarrabs* at Surat demanded a higher rate of 8 rupees for subsistence and 6 rupees per thousand of coining though they were reported to have been paid 5 rupees for the latter at the Surat mint.[89] The wages seemed to have more than doubled in the intervening period.

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[87] *Ain i Akbari*, I, pp. 17, 32-3.

[88] *Factory Records, Surat*, 94, folio 58v. In an inventory of the costs incurred by the Dutch merchants for coining silver at Surat (c. 1676), the wages paid to the *zarrabs* ("seraeb, die de ropyen haar teecken en ronte geeft") were listed as 4 rupees per thousand coins. Van Dam, *Beschryvinge van de Oostindische Compagnie*, III, ii, p. 109 (Appendix VIIIc). The date is inferred from the absence of seigniorage, abolished in 1676, in the total cost.

[89] "The jurobs demands [sic.] 8 Rs. each the moneth when there is no business and 6 p. mille on al they coin: in the tanksal they have 5 p. mille". *Factory Records, Surat*, 94, folio 39v.

Table 26

Monthly Purchasing Power of Minimum Wages in Agra

Year	Quantity of Wheat (kgs)
1595	125
1637	111-129

So far, we have been talking about the movement of money wages. However, it is real wages, money wages adjusted for price changes, which hold greater significance for an understanding of income distribution, accumulation and economic change. Table 26 brings together two sets of figures for the real wages of ordinary labourers employed in building construction (1595) and peons employed in the Dutch factory (1637). The price of wheat current in the early months of 1638 is taken to be representative of the normal price in 1637 on the assumption that a rise in wheat prices took place only from April (Table 4). The comparison does not suggest any marked changes in real wages between the two dates. The figures in Table 25 point to a decline in the wheat purchasing power of a skilled artisan between the terminal years of a 100-year period. If the real wages of artisans working for the state, nobles or merchants fell, the difference between prices and money wages must have been mopped up by the employers. However, it appears that the magnitude of profit inflation was too modest to hold wide-ranging implications for capital accumulation and economic change.

Bibliography

Abdullah, *Tarikh i Daudi*, (ed.) S. A. Rashid (Aligarh, 1954); tr., Elliot and Dowson, IV.

Abul Fazl, *Akbarnama*, (eds) Agha Ahmad Ali and Abdur Rahim, 3 vols (Bibliotheca Indica, 1873-87); Oriental and India Office Collection (OIOC), British Library, London, MS Add. 27247.

Abul Fazl, *Ain i Akbari*, (ed.) H. Blochmann, 2 vols (Bib. Indica, 1872-77).

Afif, Shams Siraj, *Tarikh i Firoz Shahi*, (ed.) Wilayat Hussain (Bib. Indica, 1891).

Akhbarat i Darbar i Mualla [Newsletters from the Mughal Court], Royal Asiatic Society, London, MS. 2361, (folios arranged reign wise) 37th regnal year of Aurangzeb [1684 AD].

Anonymous, *Tarikh i Bahadurshahi*, tr., Elliot and Dowson, VII.

Aubin, Jean, "Albuquerque et les negociations de Cambaye", *Mare - Luso Indicum*, i (1971).

Bacharach, Jere L., "Circassian Monetary policy: Copper", *JESHO*, xix (1976).

Barani, Ziauddin, *Tarikh i Firuzshahi*, (eds) Saiyid Ahmad Khan et al (Bib. Indica, 1860-2).

Bihari, Hidayatullah, *Hidayat ul Qawaid*, MS Abdus Salam Collection 379/149, Maulana Azad Library, Aligarh Muslim University. The section on mint was published by William Irvine with an English translation in the *Proceedings of Asiatic Society of Bengal* (May 1898), text, pp. 149-50; tr. pp. 150-52.

Braudel, F. P. and F. C. Spooner, 'Prices in Europe, 1450 to 1750', *The Cambridge Economic History of Europe*, vol. V, eds. E. E. Rich and C. H. Wilson (Cambridge, 1977), pp. 374-486.

Bronnen tot de Geschiedenis der Oostindische Compagnie in Perzie, 1611-38, ed. H. Dunlop ('s-Gravenhage, 1930).

Burke, Peter ed. *Economy and Society in Early Modern Europe, Essays from Annales* (London, 1972).

The Cambridge Economic History of India, eds. Tapan Raychaudhuri and Irfan Habib, 2 vols (Cambridge, 1982) (*CEHI*)

Chaudhuri, K. N., “World Silver Flows and Monetary Factors as a Force of International Economic Integration 1658-1758 (America, Europe and Asia)”, *Emergence of a World Economy.*

Chaudhuri, K. N., *The Trading World of Asia and the East India Company 1660-1760* (Cambridge, 1978).

Chicherov, A. I., *India. Economic Development in the Sixteenth-Eighteenth Centuries. Outline History of Crafts and Trade* (Moscow, 1971).

Coen, Jan Pietresz, *Bescheiden Omtrent zijn bedrijf in Indie*, 7 vols., eds. H. T. Colenbrander and W. Ph. Coolhaas ('s-Gravenhage, 1919-53).

Dagh Register: *gehouden int Casteel Batavia*, 31 vols. (each volume titled by the year/s it covers), eds. J. A. van der Chijs et al. (Batavia and 's-Gravenhage, 1887-1931).

Daniell, Clarmont, *The Gold Treasure of India: An Enquiry into its amount The Causes of its Accumulation And the proper means of using it as Money* (London, 1884).

Dastur Kaiqubad, *Dastur Kaikobad Mahyar's Petition and Laudatory Poem addressed to Jahangir and Shahjahan*, ed. and tr. Jiwanji Jamshedji Modi (Bombay, 1930)

Dastur ul amal i Alamgiri, OIOC, MS. Add. 6599.

Day, John, “The Great Bullion Famine of the Fifteenth Century”, in: *idem*, *Medieval Market Economy* (Oxford, 1987), pp. 1-54.

Della Valle, Pietro, *The Travels of Pietro Della Valle in India*, (ed.) Edward Grey, 2 vols (London, 1882).

Elliot and Dowson, *The History of India: As told by its Own Historians* (London, 1872).

[*The English Factory at Surat, Persian Correspondence : 1695-7*], OIOC, MS Islamic 150.

English Factories in India (1618-1669), (ed.) William Foster, 13 vols (each volume titled by the year/s it covers) (Oxford, 1906-27).

English Factories in India, New Series, (1670-84), 4 vols., ed. Charles Fawcett (Oxford, 1936-54).

Factory Records, Miscellaneous, OIOC, series G/40.

Factory Records, *Surat*, OIOC, series G/36.

Factory Records, Hugli, Series G/20/.

Felix, D., "Profit Inflation and Industrial Growth: The Historic Record and Contemporary Analogies", *Essays in Quantitative Economic History*, ed. Roderick Floud (Oxford, 1974), pp. 133-51.

Fischer, David Hackett, *The Great Wave. Price Revolutions and the Rhythm of History* (New York, 1996).

Foster, William, "Aurangzeb and the Treasure Hoard of Akbar", *JRAS*, 2 (April, 1925), pp. 314-6.

Fukazawa, Hiroshi, "Non-Agricultural Production", *CEHI*, I.

Gaastra, Femme S., "The Dutch East India Company and its Intra-Asiatic Trade in Precious Metals", *Emergence of a World Economy*, pp. 97-103.

Geleynssen Collection, no. 123, Algemeen Rijksarchief, The Hague.

General Ledgers, OIOC, Series L/AG/1/5/2

Generale Missiven van Gouverneure-Generaal en Raden aan Heren xvii der Verenigde Oostindische Compagnie, 7 vols. (each volume titled by the year/s it covers), ed. W. Ph. Coolhaas ('s-Gravenhage, 1960-79).

Glamann, Kristof, "The Dutch East India Company's Trade in Japanese Copper, 1645-1736", *Scandinavian Economic History Review*, i (1953), 41-79.

Grice-Hutchinson, Marjorie, *The School of Salamanca, Readings in Spanish Monetary Theory 1544-1605* (Oxford, 1952).

Habib, Irfan, "The Currency System of the Mughal Empire", *Medieval India Quarterly*, 4 (1961), pp. 1-21.

Habib, Irfan, "The Mansab System: 1595-1637", *Proceedings of the Indian History Congress* (Patiala Session, 1967), pp. 228-249.

Habib, Irfan, "Non-Agricultural Production and Urban Economy", *CEHI*, I, pp. 76-93.

Habib, Irfan, "Monetary System and Prices", *CEHI*, pp. 360-381.

Habib, Irfan, "A System of Trimetallism in the Age of 'Price Revolution', Effects of the Silver Influx on the Mughal Monetary System", in: John F. Richards (ed.) *The Imperial Monetary System of Mughal India*, (Delhi, 1987), pp. 137-170..

Habib, Irfan, *The Agrarian System of Mughal India*, 2nd edn (New Delhi, 1999).

Haider, Najaf, "Precious Metal Flows and Currency Circulation in the Mughal Empire", *Journal of Economic and Social History of the Orient*, 39 (1996), Special issue on *Money in the Orient*, pp. 298-364.

Haider, Najaf, "International Trade in Precious Metals and Monetary Systems of Medieval India: 1200-1500", *Proceedings of the Indian History Congress* (Patiala Session, 1998), pp. 237-254.

Haider, Najaf, "The Quantity Theory and Mughal Monetary History", *Medieval History Journal*, 2, ii (1999), pp. 309-348.

Haider, Najaf, "Monetary Basis of Banking Instruments in the Mughal Empire", in: Bagchi (ed.), *History of Finance and Banking in India* (Delhi, 2002), pp. 58-79.

Haider, Najaf, "Mughals and Mahmudis: The Incorporation of Gujarat into the Imperial Monetary System", in: Biswamoy Pati *et al* (eds), *Negotiating India's Past. Essays in Memory of Partha Sarathi Gupta* (Delhi, 2003), pp. 134-152.

Haider, Najaf, "Structure and Movement of Wages in the Mughal Empire", *Wages and Currency: Global and Historical Comparisons*, ed. Jan Lucassen (Forthcoming).

Hamilton, Earl. J., *American Treasure and the Price Revolution in Spain, 1501-1650* (Cambridge, Massachusetts, 1934), pp. 283-306;

Hamilton, Earl. J. "Profit Inflation and the Industrial Revolution", *Quarterly Journal of Economics*, 56 (1942), pp. 256-73; repr. in *Enterprise and Secular Change, Readings in Economic* History, eds., Frederic C. Lane and Jelle C. Riemersema (London, 1953), pp. 323-36.

Hasan, Aziza, 'The Silver Currency Output of the Mughal Empire and Prices in India during the Sixteenth and Seventeenth Centuries', *Indian Economic and Social History Review*, vi, 1 (1969), pp. 85-110.

Hasan and Gupta, "Prices of Food Grains", PIHC, Patiala.

Hawkins, William, *Early Travels in India, 1583-1619* (ed.) William Foster (London, 1921).

Hegeland, Hugo, *The Quantity Theory of Money: A Critical Study of its Historical Development and Interpretation and a Restatement* (Goteburg, 1951).

Hodivala, S.H., *Historical Studies in Mughal Numismatics* (Calcutta, 1923).

Jourdain, John, *The Journal of John Jourdain*: *1608-17*, (ed.) William Foster (Hakluyt Society, 1905).

Kafadar, Cemal, 'Les Troubles Monetaires de la fin du XVI^{e} Siecle et la Prise de Conscience Ottoman du Declin, *Annales E.S.C.*, xlvi (1991), 381-400.

Kaghzat i Mutafarriqa, OIOC, MS Add. 6586.

Kerridge, Eric, "The Movement of Rent, 1540-1640", *EHR*, 2 Ser., vi (1953).

Khan, Ali Muhammad, *Mirat i Ahmadi*, (ed.) Syed Nawab Ali, 2 vols and *Supplement* (Baroda, 1927-30).

Khan, Muhammad Sadiq, *Shahjahannama*, OIOC, MS Or. 1671.

Khan, Shah Nawaz, *Maasir al Umara*, Vol. 2, eds. Abdur Rahim and Mirza Ashraf Ali (Bib. Indica, 1888)

Khurd, Amir, *Siyar ul Auliya* (Lahore, 1302 AH).

[A Leaf from the Diary of Baz Bahadurchand], reproduced in Badri Datt Pande, *History of Kumaun*, tr. from Hindi by C. M. Agarwal (Almora, 1993).

Lahori, Abdul Hamid, *Badshahnama*, 2 vols., 3 pts., eds. Maulvi Abdur Rahim and Kabiruddin Ahmad (Bib. Indica, 1867-8)

Lawrence, *Letterbook of Issac Lawrence*, B.L. Eur. MS 387/A.

Letters Received by the East India Company from its Servants in the East, 1602-17, 6 vols., eds. Charles Danvers and W. Foster (London, 1896-1902).

Lopez, Robert, Harry Miskimin, Abraham Udovitch, "England to Egypt, 1300-1500: Long-term Trends and Long-distance Trade", in: M. A. Cook (ed.), *Studies in the Economic History of the Middle East* (Oxford, 1978), pp. 93-128.

Lucas, Robert E. Jr. "Nobel Lecture: Monetary Neutrality", *Journal of Political Economy*, 104 (1996), pp. 661-82.

Magalhaes-Godinho, Vitorino, *L'economie de l'Empire Portugais aux XVe et XVIe siecles* (Paris, 1969).

Mamuri, Abul Fazl, [Continuation of the] *Shahjahannama* [of Muhammad Sadiq Khan], OIOC, MS Or. 1671.

Marshall, John, *John Marshall in India Notes and Observations in Bengal 1668-1672*, ed. Shafaat Ahmad Khan (London, 1927).

Marx, Karl, *A Contribution to the Critique of Political Economy* (Moscow, 1970)

Miskimin, Harry, "Population Growth and the Price Revolution in England", Variorum,1975, pp. 179-86.

Miskimin, Harry, *The Economy of Renaissance Europe, 1460-1600* (Cambridge, 1977).

Moosvi, 'Silver Influx, Money Supply'

Moosvi, Shireen, *The Economy of the Mughal Empire c. 1595 A Statistical Study* (Delhi, 1987).

Moreland, W.H., *India at the Death of Akbar* (London, 1920; rep. Delhi, 1962).

Moreland, W.H., *From Akbar to Aurangzeb A Study in Indian Economic History* (London, 1923).

Moreland, W.H. "Some Sidelights on Life in Agra, 1637-39", *Journal of U.P. Historical Society*, 3 (1923), pp. 146-161.

Moreland, W.H. "A Dutch Account of Mogul Administrative Methods", *Journal of Indian History*, 4 (April 1925), pp. 69-83.

Morineau, Michel, *Incroyables Gazettes et Fabuleux Metaux* (Cambridge, 1985).

Mukherjee, Tarapada and Irfan Habib, 'Land Rights in the Reign of Akbar. "The Evidence of the Sale-deeds of Vrindaban and Aritha", *PIHC*, 50 Session (Gorakhpur, 1989), pp. 236-55.

Mukherjee Tarapada and Irfan Habib, 'The Mughal Administration and the Temples of Vrindavan During the Reigns of Jahangir and Shahjahan', *PIHC*, 49 Session (Dharwad, 1988)

Munro, John, "Bullion Flow and Monetary Contraction in Late-Medieval England and the Low Countries", in: J. F. Richards (ed.), *Precious Metals in the Later Medieval and Early Modern Worlds*, (Durham, 1983), pp. 97-158.

Nachod, Oskar, *Die Beziehungen der Niederlandischen Ostindischen Kompagnie zu Japan im Siebzehnten Jahrhundert* (Leipzig, 1897)

Original Correspondence, OIOC, Series E/3.

Ovington, J., *A Voyage to Surat in the Year 1689*, (ed.) H. G. Rawlinson (London, 1929).

"*Parwana* (order) of Raja Ragunath" [1661 AD], Biblioteca Apostolica Vaticana, Vatican, MS. Persiano 33.

Pelsaert, Francisco, *Remonstrantie*, (tr.) W. H. Moreland and P. Geyl, *Jahangir's India* (Cambridge, 1925); *De Geschriften van Francisco Pelsaert over Mughal Indie, 1627: Kroniek en Remonstrantie*, eds. D. H. A. Kolff en H. W. van Santen ('s-Gravenhage, 1979)

Pheru, Thakkura, *Dravya Pariksha*. *Thakkura Pheru Virachita Ratnaparikkshadi Sapt Granth Samgraha*, (eds) Agar Chand and Bahnwar Lal Nahta (Jodhpur, 1961).

Prakash, Om, *The Dutch East India Company and the Economy of Bengal: 1630-1720*, Delhi, 1988.

Precious Metals and Commerce: The Dutch East India Company in the Indian Ocean Trade (Variorum, 1994)

De Opkomst Der Westerkwartieren van De Oost-Indische Compagnie (Suratte, Arabie, Perzie), ed. H. Terpstra (s-Gravenhage, 1918)

Oxenden Papers, B.L. Add. MSS 40696- 40713 (18 vols.)

Qazwini, Amin, *Badshahnama*, OIOC, MS Add. 20734; MS Or. 173.

Ramsay, Peter H. ed. *The Price Revolution in Sixteenth Century England* (London, 1971)

Raychaudhuri, Tapan, "Non-Agricultural Production", *CEHI*, pp. 261-307.

Raychaudhuri, Tapan , "Inland Trade", *CEHI*, I.

Thevenot, *The Indian Travels of Thevenot and Careri*, ed. Surendra Nath Sen (New Delhi, 1949).

Roe, Thomas, *The Embassy of Sir Thomas Roe to India 1615-19*, ed. William Foster (1926; repr. Delhi, 1990).

Selected Waqai of the Deccan (1660-1671 A. D.), ed. Yusuf Hussain (Hyderabad, 1953)

Sijzi, Amir Hasan, *Fawaid ul Fuad*, (ed.) Latif Malik (Lahore, 1966).

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

Steuart, James, *A Collection of Miscellanies Relative to Coinage in India* (n. p., n. d.).

A Supplementary Calendar of Documents in the India Office relating to India or to the Home Affairs of the East India Company, 1600-1640, (ed.) William Foster (London, 1928).

Surat Documents, Bibliotheque Nationale, MS Blochet, Supplement Persan 482.

Tavernier, J. B., *Travels in India*, (tr.) V. Ball, 2nd edn, rev. W. Crooke, 2 vols (London, 1925).

Thevenot, Jean de, *The Indian Travels of Thevenot and Careri*, (ed.) Surendra Nath Sen (New Delhi, 1949).

Uytrekening van de goude en silvere muntswaardye. Inhout de maten en swaarte der gewigten in de respective gewesten van Indien, (Middelburg, 1691).

Van Dam, Pieter, *Beschryvinge van de Oostindische Compagnie*, (eds) F. W. Stapel and C. W. Th. van Boetzelar, 4 vols., 7 pts ('s-Gravenhage, 1927-54).

Van Santen, H. W., *De Verenigde Oost Indische Compagnie in Gujarat en Hindustan, 1620-1660* (Leiden, 1982).

Van Twist, Johan, "Johan Van Twist's Description of India", tr. W. H. Moreland, *Journal of Indian History*, xvi (1937), 63-77

Vilar, Pierre, *A History of Gold and Money 1450-1920* (London, 1976; repr. 1991).

Von Glahn, Richard, *Fountain of Fortune: Money and Monetary Policy in China, 1000-1700* (Berkeley, 1996).

Waris, *Badshahnama*, OIOC MS. Add. 6556

Weber, Max, *General Economic History*, tr. F. H. Knight (London, 1929).

Wright, H. Nelson, *The Coinage and Metrology of the Sultans of Delhi* (Oxford, 1936).