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Prices and Real Wages in the Middle East, 1469 to 1914*

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Abstract :

Utilizing a large volume of archival documents, this paper establishes for the first time the long-term trends in consumer prices and wages of skilled and unskilled construction workers in Istanbul and more generally around the Eastern Mediterranean from the second half of the fifteenth century until World War I. These series are then inserted into a larger framework of price and wage trends in European cities during the same period. Our series show that real wage differences between Istanbul and the leading cities in Western Europe existed as early as the sixteenth century. Although these differences widened during the nineteenth century, they were still smaller on the eve of World War I than the differences suggested by the existing series on GDP per capita between Turkey and the respective European countries. These results suggest caution about using wages in a leading city or urban wages more generally as a proxy for GDP per capita or the standards of living in a given country.

I- Prices

We begin with a summary discussion of the methodology and then present the basic results of a recently completed study on prices and wages in Istanbul, and to a lesser extent in other leading cities of the Ottoman Empire, from the fifteenth to the twentieth century.

The study on prices has utilized data on the prices of standard commodities (food and non-food items) collected from more than six thousand account books and price lists located in the Ottoman archives in Istanbul. In the first stage of the study, three separate food price indices were constructed. One of these is based on the account books and prices paid by the many pious foundations (vakif), both large and small, and their soup kitchens (imaret). Another index is based on the account books of the Topkapi palace kitchen and the third utilizes the officially established price ceilings (narh) for the basic items of consumption in the capital city.

To the extent possible, standard commodities have been used in the construction of these indices in order to minimize the effects of quality changes. Each of the three food indices includes the prices of ten to twelve leading items of consumption, namely flour, rice, honey, cooking oil, mutton, chick peas, lentils, onions, eggs, sugar (for the palace only), coffee (beginning in the seventeenth century for the palace and eighteenth century for the pious foundations) and olive oil for burning. Amongst these, flour, rice, cooking oil, mutton, olive oil and honey provided the most reliable long term series and carried the highest weights in our food budget. In cases where the prices of one or more of these items were not available for a given year, the missing values were estimated by an algorithm that applied regression techniques to the available values.

Based on the available evidence regarding the budget of an average urban consumer, the weight of food items in the overall indices was fixed between 75 and 80 percent. The weight of each commodity in the overall index was then based on the shares of each in total expenditures of the respective institutions. It is likely that the diets of private households in the capital city differed from those offered by the soup kitchens. At this stage, however, it is not possible to approximate the private diets more closely.

The medium and long term trends exhibited by the three food price indices are quite similar. Nonetheless, because the palace and narh prices might be considered as official or state controlled prices, the study gives greater weight to the indices based on the prices paid by the soup kitchens, and more generally, the pious foundations.

In the second stage, prices of non-food items obtained from a variety of sources, most importantly the palace account books, were added to the indices. These commodities are soap, wood, coal, nails by weight (used in construction and repairs). A cost of living index should also include price of cloth and rental cost of housing but an adequate series for these two prices are not available at this stage.

For the period 1860 to 1914, data from the palace, yakif and narh sources are very limited. For this reason, the detailed quarterly wholesale prices of the Commodity Exchange of Istanbul covering about two dozen commodities were used. Indices based on these prices were then linked to those covering the earlier period.

We have thus obtained for the first time for the Middle East, in fact for the first time for anywhere in the non-European world, detailed and reliable price series for these four and a half centuries. For Istanbul, the results can be extended from 1914 to the present since published data on consumer prices is readily available for the recent period.

Graph 1 shows the annual values of the overall price index that combines the food prices obtained from the account books of pious foundations with the prices of non-food items. The vertical axis is given in log scale so that the slope of the line indicates the rate of change of nominal prices. These results indicate that prices increased by a total of about 300 times from 1469 until World War I. This overall increase corresponds to an average increase of 1.3 percent per year for the entire period.

The indices show that Istanbul experienced a significant wave of inflation from the late sixteenth and to the middle of the seventeenth century when the prices increased by about five fold. This is the period usually associated with the Price Revolution of the sixteenth century. The indices also show, however, that there occurred a much stronger wave of inflation beginning late in the eighteenth century and lasting into the 1850's when the prices increased by 12 to 15 times. Most of the latter increases were associated with the debasements that began in the 1780's and accelerated during the reign of Mahmud II (1808-1839). In contrast, the overall price level was relatively stable from 1650 to 1780 and from 1860 until World War I.

Istanbul was chosen primarily because the data was most detailed for the capital city. However, price data from the account books of the pious foundations is available for other cities of the empire. Price observations from a shorter list of commodities was used to construct separate indices for the cities of Edirne, Bursa and Damascus. Similar but more limited data are available for Konya, Trabzon and Jerusalem. These indices indicate clearly that prices in other Ottoman cities moved together with those in Istanbul for the period for which comparable data is available. In these cities, both the overall change in the price level from 1490 to 1860 and the two major jumps in the price level that occurred late in the sixteenth and early in the nineteenth century were broadly comparable to the price trends in Istanbul. (Graph 2)

From the long term perspective offered by these price indices and our study of the Ottoman currency, debasements or the reduction of the specie content of coinage by the monetary authorities appear as the most important cause of Ottoman price increases. The relation between debasements and the price level can be established more closely by constructing price indices expressed in grams of silver which is obtained by multiplying the value of the price index by the silver content of the Ottoman currency for the same year. Graph 3 presents the overall price index for Istanbul in grams of silver. It is remarkable that even though nominal prices in Istanbul increased by about 300 times, prices expressed in grams of silver stayed within the relatively narrow range of 1.0 to 3.0 during these four and a half centuries.

II- Wages

In this second part of the study, daily wage data were gathered from several thousand account books of the construction and repair sites in Istanbul and other cities. These account books contain daily wages for both unskilled and a variety of skilled construction workers. Urban construction workers was a relatively homogeneous category of labor over time and space. Moreover, in contrast to the payments made to other employees, urban construction workers received a high proportion if not all of their pay in cash rather than in kind or in the form of shelter, food and clothing. As a result, their wages allow for useful inter-country comparisons between pre-industrial societies.

The construction account books prepared by the state or by pious foundations of varying size and utilized for the purposes of this study usually consisted of a series of attendance records listing the workman employed, craft of the worker, his rank (master, common laborer etc.) and the wages paid to each. Information about the length of the workday is rare in these records. Similarly, information regarding whether food or lunch is provided along with the daily wage is usually not given. For that reason, we have chosen to ignore those aspects of the daily wage. We have also decided to ignore the seasonal variations in daily wages. In any case, the overwhelming majority of the available observations belong to the construction season (April through October in Istanbul).

The wages for unskilled workers referred mostly to one type of worker, called irgad in the early period and rençber after about 1700. In contrast, daily wage rates could be found in for more than half a dozen categories of skilled construction workers in these account books. In order to utilize the additional information, an index was constructed for skilled wages which included the wages of carpenters, masons, stonecutters, ditchdiggers, plasterers and others. Based on the relative frequency with which they appeared in the account books, the greatest weight in this index was given to the category of neccar, specialists who built wooden houses and the wooden parts of buildings. Their share fluctuated between 50 to 60 percent in our skilled wage index.

Graph 4 presents real daily wage series for skilled and unskilled construction workers obtained by deflating the nominal daily wage series by the consumer price index for the city of Istanbul. For both the skilled and unskilled real wage series in this graph, the base years 1489-90 are set at 1.0.

These indices indicate that real wages of unskilled construction workers in Istanbul declined by 30 to 40 percent during the sixteenth century. Population growth must have been the most important determinant of this trend. After remaining roughly unchanged until the middle of the eighteenth century, Istanbul real wages increased by about 30 percent from late eighteenth until mid-nineteenth century and then by another 40 percent during the late nineteenth and early twentieth century. On the eve of World War I, real wages of unskilled construction workers were about 20 percent above their levels in 1500. Because the skill premium rose during the nineteenth century, real wages of skilled workers stood at approximately 50 percent above their levels in 1500.

The purchasing power of the daily wages of both the skilled and unskilled workers were reasonably high during these four and a half centuries. During the sixteenth century, an unskilled construction worker could purchase with his daily wage 8 kilos of bread or 2.5 kilos of rice or more than 2 kilos of mutton. Daily wages of skilled workers were 1.5 to 2 times higher. At these levels of daily pay, skilled construction workers must have enjoyed standards of living well above the average for the population as a whole and also above the average of the urban areas even if they did not work for as many as 200 days per year.

We were also able to collect data on the daily wages of construction workers, both skilled and unskilled, in other Ottoman cities around the eastern Mediterranean including the Balkans for the same period, 1490 to 1914. These observations were obtained from the account books of the pious foundations operating in these cities and are available from the Ottoman archives in Istanbul. These series show clearly that nominal wages in other Ottoman cities were quite comparable and occasionally higher than those of Istanbul during the sixteenth century when the latter was still modest in size at 100,000 to 200,000. With the growth of Istanbul over time, however, the nominal wage gap between it and the other urban centers began to widen.

Nonetheless, the trends in the real wages in the capital city can be taken as an approximation of the trends in other urban centers. (Graph 5)

III- Comparisons with Europe

In a recent study of prices and wages in European cities from the Middle Ages to the First World War, Robert Allen (1998) utilizes a large body of data most of which was compiled during the early part of this century. In order to facilitate comparisons, he has converted all price and wage series into grams of silver and chose as a base the index of average consumer prices prevailing in Strasbourg during 1700-49.

Allen argues that even though wages in a single city may be accepted as a barometer of wages in the whole economy, international comparisons need to be made between cities at similar levels in the urban hierarchy. Since his study uses data from cities at the top of their respective urban hierarchies such as London, Antwerp, Amsterdam, Milan, Vienna, Leipzig and Warsaw, it would make sense to insert Istanbul, another city at the top of the urban hierarchy of its region, into this framework. It is not very difficult to do so since prices and wages were already expressed in grams of silver in the present study. However, it was still necessary to express Istanbul prices in terms of the Allen base of Strasbourg 1700-49=1.0. For this purpose, Ottoman commodity prices for the interval 1700-49 were applied to Allen's consumer basket with fixed weights. A second and equally useful method of linking Istanbul's price level to those of other European cities in the Allen set was to employ the detailed annual commodity price series gathered by Earl Hamilton for Valencia and Madrid for 1500 to 1800 and compare them with the Istanbul prices for the same commodities. Since Valencia and Madrid prices were already calibrated into the Allen set, it was then possible to determine the Istanbul price level vis-a-vis European cities for each interval. The two procedures produced results that were quite similar.

My indices show that daily wages in Istanbul and other Eastern Mediterranean cities expressed in grams of silver were comparable to many other locations in northern and southern Europe in the early part of the sixteenth century. However, because Istanbul prices were higher than all other cities in Allen's sample, real wages in Istanbul varied between 60 and 90 percent of real wages in other cities during that period.

Istanbul real wages increased by about two thirds from the last quarter of the eighteenth century until World War I. As a result, the gap in real wages between Istanbul and other cities in northwestern Europe, London, Antwerp, Amsterdam, and Paris appears to have widened after the Industrial Revolution but less than one might have expected. On the eve of World War I, real wages of unskilled workers in London were 2.7 times greater than those in Istanbul. Graph 6 shows that real wages of unskilled workers in Amsterdam were 90 percent higher and Paris wages were 60 percent higher than those in Istanbul during 1900-13.

IV- Wages as an Indicator of Standards of Living

While the results in Graph 6 are broadly in line with our expectations, a comparison with the purchasing power parity (PPP) adjusted GDP per capita series recently constructed by Angus Maddison (1995) reveal differences that are not insignificant. The Maddison series show that per capita GDP differences between Turkey on the one hand and United Kingdom, France, the Netherlands and Italy on the other were wider than the differentials in the real wages of unskilled construction workers in the leading cities of each pair of countries. The PPP adjusted per capita GDP estimates by Maddison point to a 1 to 5 gap between Turkey and the United Kingdom; 1 to 3.8 gap between Turkey and the Netherlands; and 1 to 3 gap between Turkey and France. The same series indicate that PPP adjusted per capita GDP in Italy was 2.3 times higher than that of Turkey. In contrast, Istanbul real wages were close to but higher than those of Florence and Milan in 1900-13.

In short, the gap in PPP adjusted per capita GDP between Turkey and these European countries on the eve of World War I appears, on the average, to be twice as high as the real wage gap between Istanbul and the leading cities in these countries.

Part of this divergence may be due to errors of measurement in the available series. We doubt, however, that these improvements in the available series can eliminate the divergence between the urban real wage and per capita GDP series. Instead, we think there are a number of other factors all or most of which contributed more significantly to this divergence.

First, there were important differences between the nominal wages of construction workers in Istanbul and those of other Ottoman cities. During the second half of the nineteenth century and up to World War I, Istanbul wages were, on the average, 40 to 50 percent higher than nominal wages in other cities within the borders of modern Turkey. In contrast, official data on the prices of essentials indicate that in 1913-14 prices of essential commodities purchased by the consumers were closer to each other appeared to be lower in Istanbul than the average of the 20 leading cities within Turkey.

Secondly, there is evidence for a growing scarcity of labor in urban areas during the second half of the nineteenth century until World War I. With its low population density, Anatolia was a labor scarce, land abundant area until the middle of the twentieth century. These factor proportions supported small peasant ownership and production. Landless peasants became sharecropping tenants and wage labor in agriculture remained limited to seasonal labor for specific crops. The availability of land and the prevalence of small peasant production may have slowed down rural-urban migration and contributed to labor shortages in the urban areas.

These urban-rural differences combined with the regional differences or Istanbul vs. the rest gap mentioned above to create large differences between per capita nominal income levels of the Istanbul region and the rest of the country. Vedat Eldem's estimates indicate that on the eve of World War I, per capita income levels of the Istanbul region, which was mostly but not entirely urban, were twice as high as the average for the Ottoman Empire as a whole.

All this suggests that the daily wages of urban construction workers in the Ottoman Empire may have been high in relation to the underlying per capita income, at least in comparison to the western and northern European context.

In conclusion, we doubt that the divergence between the available urban real wage and per capita GDP series for Istanbul and the Ottoman Empire can be eliminated by developing more reliable real wage and/or per capita GDP series. Instead, this divergence should caution us about using daily wages of construction workers in a leading city or more generally in the urban areas as indicators of the standards of living for an entire country.

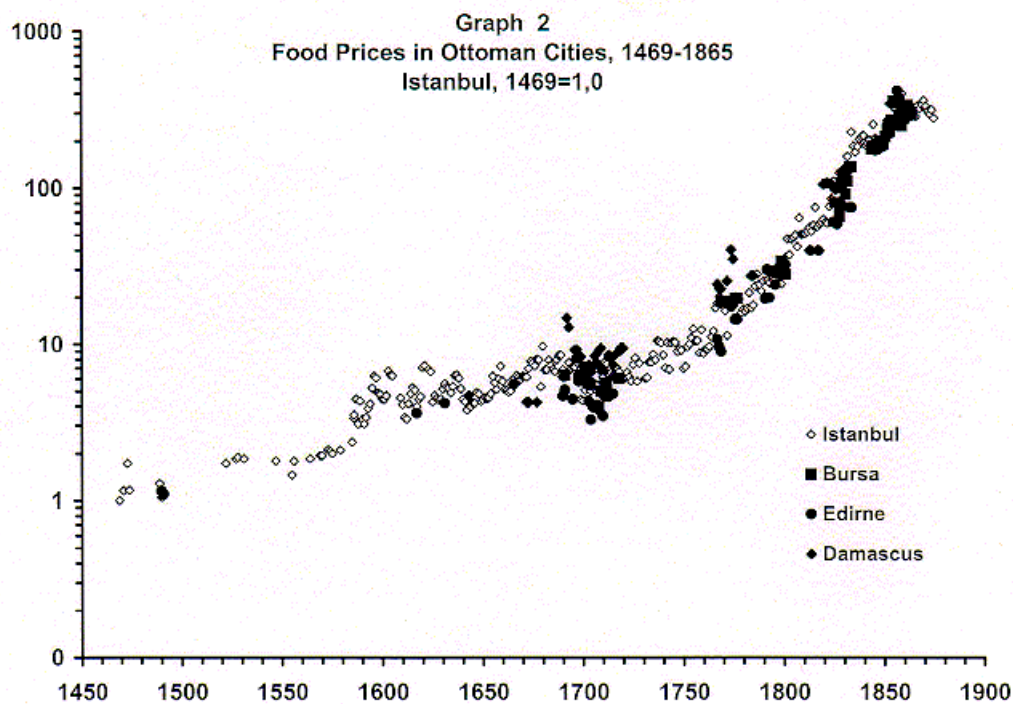
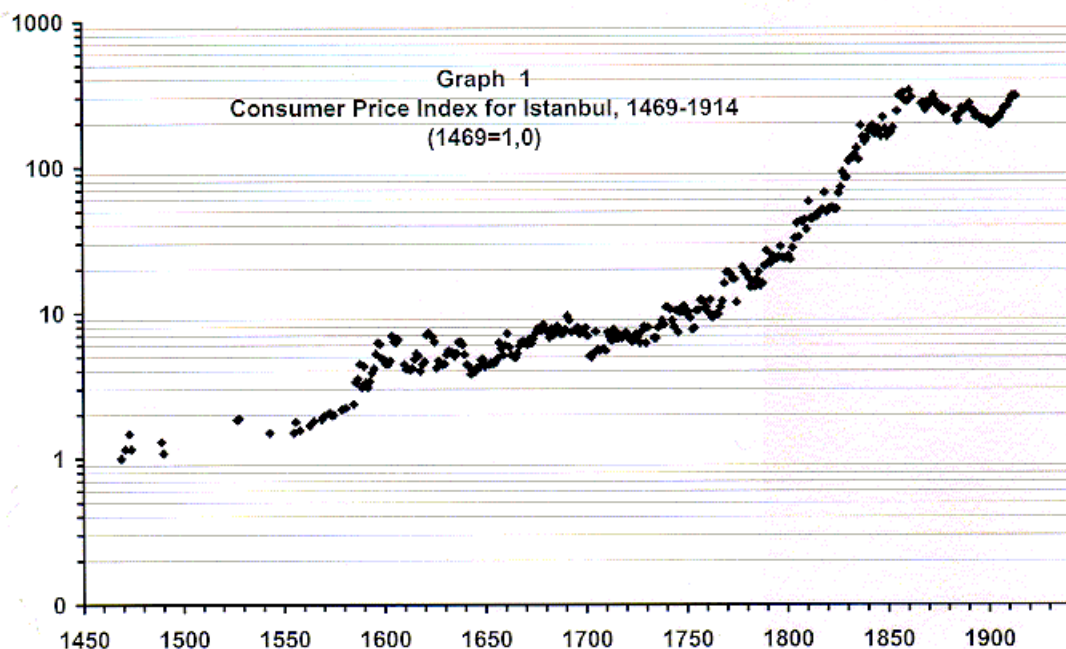
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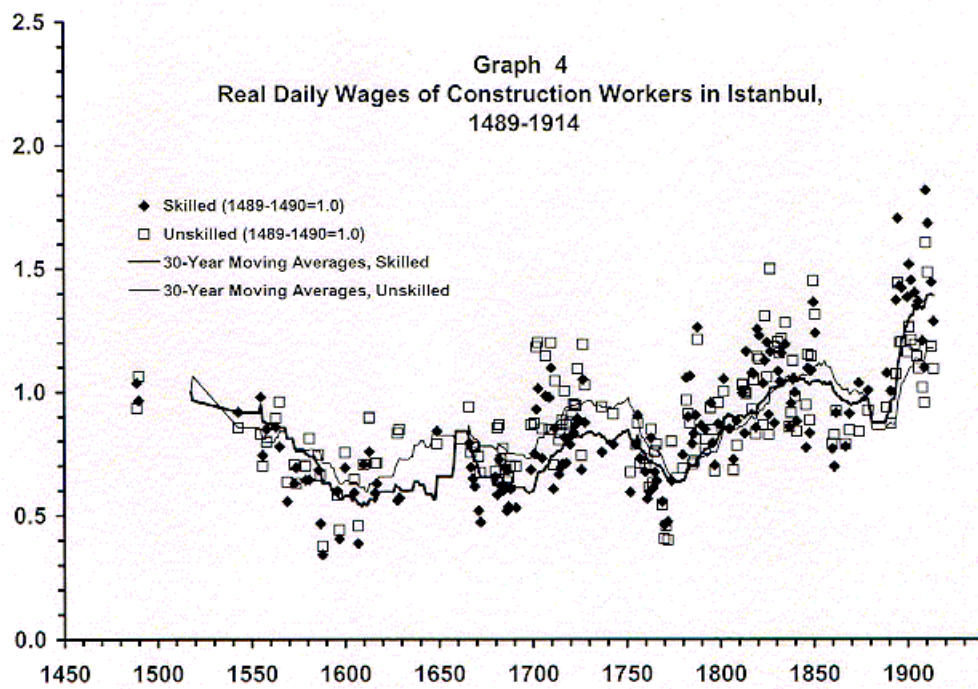
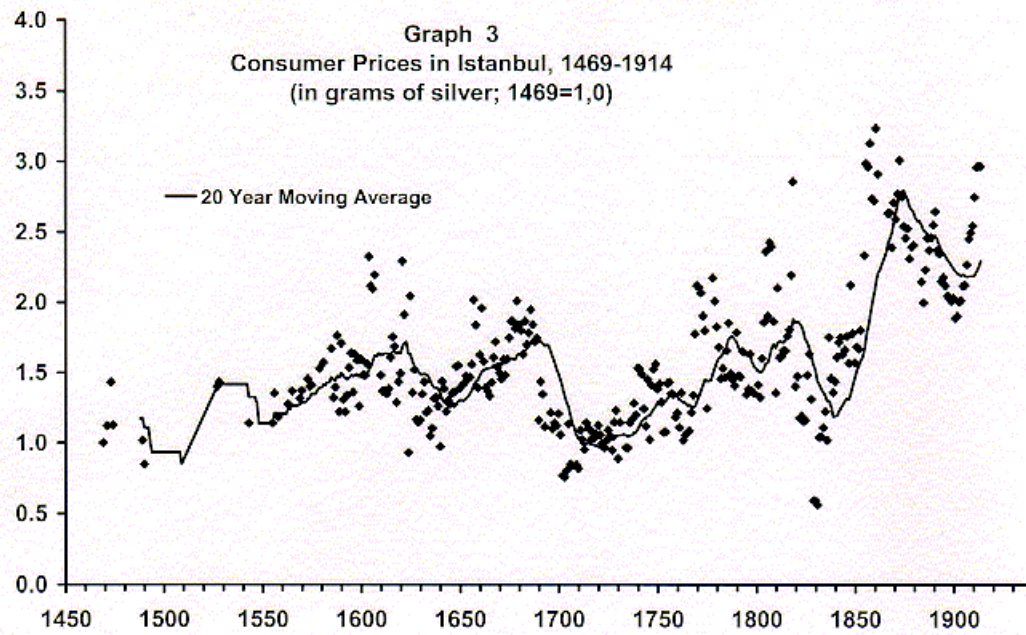
References

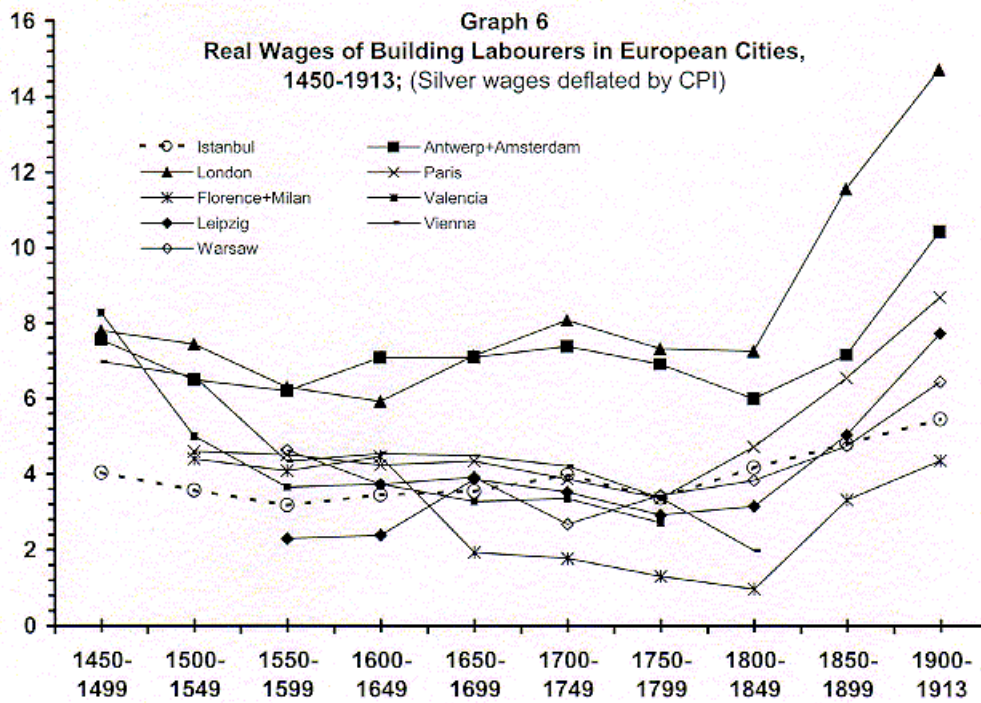
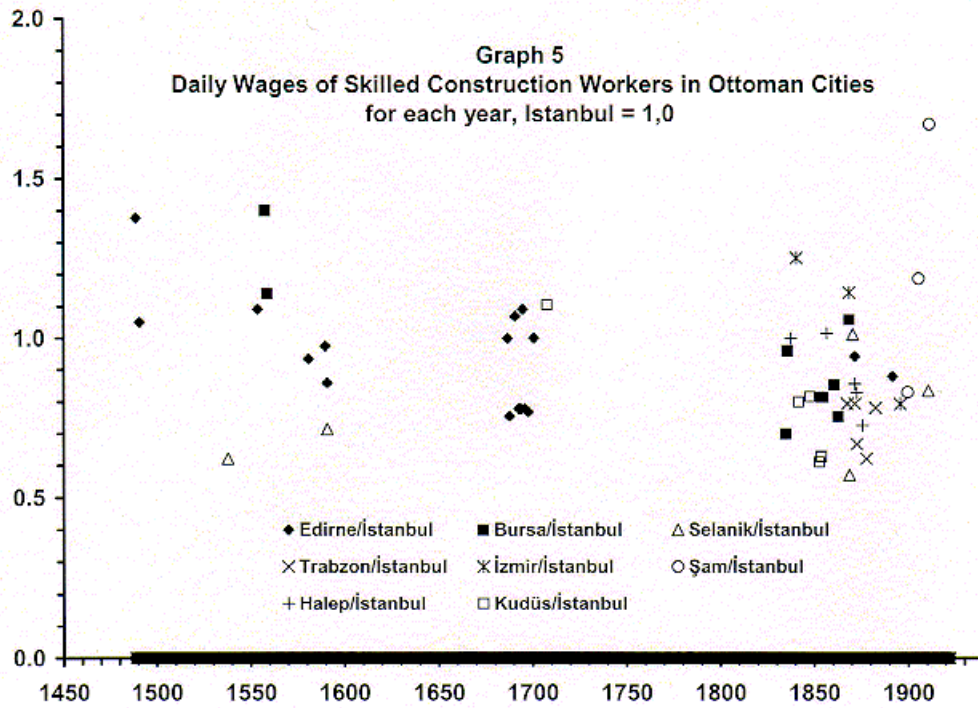
Allen, Robert (1998), "The Great Divergence: Wages and Prices in Europe from the Middle Ages to the First World War", Discussion Paper No. 98-12, Department of Economics, University of British Columbia, August; <http://web.arts.ubc.ca/econ/>

Hamilton, Earl J.(1934), American Treasure and the Price Revolution in Spain, 1501-1650, Harvard University Press, Cambridge.

Hamilton, Earl J. (1947), War and Prices in Spain, 1650-1800, Cambridge, Mass.







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