PRICES AS A TOOL OF HISTORICAL ANALYSIS

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I

Our aim in this essay is to explore some of the major issues related to the historical study of prices. This involves questions both as to methods of analysis and interpretations of prices and their changes, as well as their significance for understanding broad historical issues. Price data can be used to go beyond the answering of questions about the local and international economies, to be used to explore important questions of social and political history. For this reason, the study of prices has generated a large body of literature concerning methods, procedures of analysis and interpretation of findings.

Prices are a basic datum of the economic system, the outcome of transactions in the market and are therefore a frequently recorded item, and thus quite often surviving in historical records. They exist for many times and places throughout recorded history, and information on prices can be found in many diverse sources. The very abundance of price data provides a basis for useful comparisons of price movements and of market behavior, even allowing for difficulties in their collection and analysis. For various reasons, prices may not be available for prolonged periods of time and/or the frequency of observations varies, posing difficulties for the preparation of reliable time series. Further, as in any historical study, there are a number of problems which make precise price comparisons difficult. Terms of transactions for example, may vary as to period of payment, credit terms, and interest costs

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in future payment; the quality of goods may vary; and even the unit of exchange might vary over time.

Once examined, prices can serve as the basis of some technical measures of items of economic an social interest; e. g., real output and real wages. Second, price movements are variables that can be explained by supply and demand analysis, permitting an understanding of economic and other changes. Third, prices serve as an incentive to behavior and as a determinant to the rewards of economic behavior, and thus the study can help to understand the motivations of individual and groups. Fourth, prices serve as the basis for testing various hypotheses, such as the relationship between price level changes and economic growth, and of the relationship between price level changes and the nature and magnitude of social protest. Given these diverse interests, there is no one method of price history appropriate for all questions. But it reminds us of the great range of social and political, as well as economic, questions that can be examined through these quantitative series.

II

The first formal international organization for the historical study of prices –the International Scientific Committee on Price History– was established in the late 1920s and led to numerous publications from the 1930s to the 1950s. The most familiar of the collections published by them include those of Sir William Beveridge for England, Arthur H. Cole, Anne Bezanson, G. F. Warren, F. A. Person, Thomas S. Berry, George R. Taylor and Ruth Crandall for the United States, and Nicolaas W. Posthumus for the Netherlands, but series also prepared for Austria, France, Germany, and Poland. Perhaps the most widely used of these by historians, is the series on Spanish prices prepared by Earl J. Hamilton. These enormous compendia of price history involved mainly the collection of price data for certain commodities from various primary sources and the preparation of relatively simple price indices. In general less was done by these scholars in analyzing the behavior of the resulting series. Recently there has been a revival of interest in the field, as can be seen in more advanced statistical studies, in several conferences and even in the recent publication of a Price History Newsletter.[1]

All of this concern with prices is justified by the singular importance prices can have in influencing the behavior of societies as well as in determining the rewards of economic activity. It can be argued that much of economic history is encompassed by price history. In the study of changing market

[1] See Arthur H. Cole and Ruth Crandall, "The International Scientific Committee on Price History", *Journal of Economic History*, 1964.

structure and behavior; of the growth of various industries; and in the measurements of standards of living, examination of changes in prices play a fundamental role. But prices by themselves are insufficient to describe changes in these larger economic processes or structures, and therefore the study of price history requires that scholars obtain necessary supplementary data with which to make clear the meanings of the price changes which have been found to have occurred. Thus, for industry and consumption studies, it is necessary to obtain information on levels and changes in outputs of specific commodities making it possible to distinguish the relative importance of what are considered to be either supply or demand forces in accounting for price changes.

Further, to measure changing real wages and living standars over time, it is necessary to obtain the appropriate consumption weights, based on the importance of different categories of expenditure. The information for the construction of these weights can generate, as an interesting by-product, important information on the social history of diets and the role of certain necessary consumer goods.

In addition to the prices of various consumer and producer products, the construction of a systematic price history requires the preparation of price series for other items, such as money (interest rates), foreign currencies (exchange rates), and labor (wages). Interest rates are important, as price levels will be affected by the relative scarcity or abundance of specie and other forms of money. Similarly, changes in the rate of exchange between the currencies of differents countries would help to explain differences observed in the relative price movements between countries. To compare differing price trends in two countries it is important to determine the influence –positive, negative or neutral– of the movements in exchange rate between the two.[2]

It is also essential to remember that prices are a quantitative concept, and their analysis requires the application of modern statistical procedures. This requirement has often created a resistance among traditional historians who are opposed to statistical reasoning applied to historical problems. This in turn, has sometimes led to a reluctance on the part of those who study historical prices to carry out the appropriate rigorous analyses. Yet, such analysis are fundamental for the successful interpretation of the meaning of the prices found in historical documents.

III

A fundamental concern in examining prices is the distinction between movements in the absolute level of prices and movements in the relative prices of

[2] Published somewhat intermittently since 1984 by John McCusker, now at Trinity University.

different commodities. This distinction is crucial to the analysis of any price change. The interpretation of the change in the price of a commodity differs significantly if all other prices changed to the same degree rather than it being a change in price relative to other commodities.

The absolute level of prices is a statistical artifact based on the individual prices used to compute a price index, with some weighing scheme to allow for the relative importance of different commodities. Although it is generally presumed that in inflationary movements most prices move in the same direction, inflation does not imply that all prices change to the same extent or even in the same direction, but rather that some overall average measure of prices has changed. The fact that not all prices change by the same order of magnitude is not by itself a point that can be used to argue against a relationship of monetary changes and price changes, since even with a zero mean change (i. e. constant price level) relative prices may change.

And overall price index is used to deflate nominal wages to obtain a measure of real wages, and also to deflate nominal output to obtain measures of real output, although the price indices used for these purposes may not be the same. Comparisons of real wages and real output over time make it possible to estimate changes in the actual physical amounts consumed and produced in the economy. If there were no accounting made for changes in the overall price level, comparisons of nominal wages and nominal output over time will include changes both in the actual physical amounts and changes in the level of prices, and would thus serve as an improper measure of real economic growth.

Changes in the level of prices are usually explained as the outcome of changes in the quantity of money and/or its velocity (i. e. the frequency with which each unit of money is used to purchase goods), although the causes of changes in money supply and in velocity remain the basis for analysis. Most familiar for the study of Latin American and European price history is the argument of Earl Hamilton that the specie flows from Latin America led to the increasing the level of prices within Spain and elsewhere in Europe in the 16th and 17th centuries. An important aspect of such specie flows is the linking of prices in different countries and in different markets for traded goods. An implication is that changes in the absolute price level within one country are not independent of what happens in other countries.

The most widely discussed use of price level and real wage data to explain rates of economic growth, has been that of Earl Hamilton, linking rising prices to falling real wages, increasing profits, higher investments, increased growth and, consequently, the European Industrial Revolution. The Hamilton proposition has long been the subject of historical and economic debate, and several of Hamilton's estimates and interpretations have been criticized by scholars.[3]

[3] For a recent discussion of purchasing-power-parity, relating changes in the price levels in two

Nevertheless, it often seems to be believed that rising price levels lead to economic growth, and it may be that too rapid a rise in the price level (without and adequate redistribution of purchasing power) may cause economically destabilizing social unrest and rebellion.

The basic explanation for overall price level changes differs from that used to explain changes in the relative prices for different commodities. To a certain extent, particularly in the long run, changes in total output may be consistent with a large range of price level changes, positive and negative. There is no necessary relationship between an overall changes in prices and the limited productive capacity of an economy, based on the availability of factors of production, technological knowledge, and entrepreneurial skills. A constant or a falling price level, as well as a rising one, could be consistent with full employment of resources. That a limitation to the productive capacity of an economy will exist is not disputed, but the question is whether this limit is more severe with rising or high prices then it is with falling or low prices.

IV

Some very important historical problems can be studied by examining the changes in the relative prices of different commodities. Many commodities are bought and sold in markets, and the price of one commodity relative to the prices of others may rise or fall. As noted, is important to determine if the price change for a specific commodity is part of an overall change in the level of all prices, or rather is a change in its relative price compared to a specific set of other commodities.[4] Therefore it is not sufficient to explain price changes, in the case of one commodity, without making comparisons with prices for other goods traded, among which producers and consumers may choose.

Basic to the explanation of relative price (and output) changes is the use of supply and demand analysis. The apparatus of supply and demand is used to get at the basic underlying factors causing changes in prices and quantities. For example, among those influences causing changing demand are population change, income change, changing prices of substitutes and complements,

countries and the exchange rate, see the chapter on "The Monetary Approach to the Balance of Payments", in Richard E. Caves, Ronald Jones, and Jeffrey A. Frankel, *World Trade and Payments* (5th ed., Boston, 1988).

[4] See e. g. R. A. Kessel and A. A. Alchian, "Meaning and Validity of the Inflation-Inducted Lag of Wages behind Prices", *American Economic Review*, 1960. For recent brief reviews of this debate by macroeconomists, see Barry Eichengreen, "Macroeconomics and History", in Alexander J. Field, ed., *The Future of Economic History* (Boston, 1987), and Michael D. Bordo, "Essays in Monetary History: A Survey of the Literature", *Explorations in Economic History* (1986). See also Peter H. Ramsey, ed., *The Price Revolution in Sixteenth-Century England* (London, 1971).

and changes in tastes for different commodities. The variables influencing supply include the availability and costs of factors of production, and the technical efficiency of production. Supply and demand as defined to be exhaustive categories, in that anything that changes prices can be considered to have changed either the supply or the demand for the commodity. It should be noted that some of these items are regarded as strictly economic in nature, while others reflect more social and cultural changes whose economic impact can be analyzed.

To satisfactorily analyze relative price changes, it is necessary to have information in regard to both relative price changes and to relative changes in quantities. A relative price rise may reflect either a reduction in supply (due, for example, to a crop shortage) or else an increase in demand (the result, for example, of an increase in population). In the former case, the price increase reflects a decline in quantity, in the latter case, the price increase is consistent with an increase in quantity. Unfortunately, in many cases, there is direct evidence only on the price change, and it is necessary to discuss the impact of supply and of demand on the basis of supplementary information. At times, the supplementary data permit reasonable inferences, such as information about the presence of famine conditions and/or the changes in population; at other times, such inferences can only be made on a more limited and on a less certain basis.

The interpretation of relative price changes will vary depending upon the nature of the market in which the goods are produced and sold. It is necessary to distinguish between goods which are produced and sold only within a local area; goods which are produced locally but sold within a larger market, be it within the country, or elsewhere in the world, and goods which are produced in an external market which are consumed locally. For those goods which are non-local in nature, price changes will be influenced (if not determined) in external markets and therefore will not by themselves reflect only local market conditions. Further, for those goods in which prices and quantities are determined locally, it is important to note that the magnitude of relative changes in the two may not be equivalent. The concepts of the elasticities of demand and of supply relates percentage changes in quantities to percentage changes in prices, reminding us that sharp price changes may mean less dramatic changes in quantities. If, for example, the demand for a commodity is inelastic (as is generally the case with most basic foodstuffs), the decline in consumption will be less than the measured increase in price.

Relative prices are also of interest because in most societies, since prices can determine the rewards that people obtain from economic activity, and thus will influence their behavior. Moreover, the study of prices will help in understanding the impact of expected changes in prices and quantities upon behavior, and to understand why the formation of price expectations is a central part of understanding the process of economic change. High relative prices in one period, if expected to continue, should generally generate higher levels of output in future years. Therefore, it is argued, shortages in one period, leading to higher prices, can lead to increased outputs in the future.

Prices seen as the rewards from the economic system, influence the distribution of income. Changes in the relative prices by themselves will generally aid one group in the market at the expense of another. Nothing that there are two sides to the market, it is possible that some group is hurt by price changes, or, rather could have been made better off with some alternative price changes. Thus, high and rising prices, will generally hurt consumers (and benefit producers), while low and falling prices will benefit consumers (often at the expense of producers). "Overproduction" (usually indicated by falling prices), is assumed to be harmful to producers, but the economic benefits to those who consume these goods, are often ignored. Lower prices, however, may not in themselves mean a worsening of producer conditions over time, if low prices reflect improvements in methods of production and/or reduction in the costs of necessary inputs. Since there are two sides to a market, one can always find discontent no matter in which direction the price moves, and no matter what the change in income position compared to an earlier period of time.

V

Several general patterns of interest regarding prices have been found in historical studies. Regarding the historic perennial raised by Hamilton, the relationship between changing price levels and rates of economic growth, there have been cases when economic growth was apparently more rapid when prices were declining, such as in the period of rapid industrialization of the United States, and elsewhere, in the late nineteenth century. The findings concerning the relationship between price changes and social unrest are also rather mixed. Though social unrest has developed at times of high relative prices of foodstuffs due to product scarcity, as well as in times of high overall price levels due to inflation, cases exist where social unrest could be attributable to low prices. To again use the United States example, the period of late nineteenth century price fall saw major protest movements developed among farmers and laborers. Clearly then, in and of itself, a rise or a fall in the price level cannot alone explain social conflict. The arguments presented for the role of low prices in generating protest point to those problems confronted by producer groups, where the reaction to low prices due to "overproduction" led to a landlord action against peasants, or, where the lowering of the price paid for a product in a period of monopoly arrangements created unrest among the producers of that commodity. These variants pose a number of questions about the relationship between price changes and political protest; e. g., would the political reaction differ if it were believed that the lowered price reflected administrative decisions by individuals or business firms rather than if they reflected overall market changes over which a company had no control? Was the political reaction to a price reduction which returned prices to previous levels from an unusually high peak as strong as one to in reaction to a reduction of prices to a new low level?

VI

Patterns of change in real wages and in material life have varied by country and by time period, due to obvious significant differences in economic conditions. The use of real wage measures, accurate and reliable for the population studied, may not, of course, truly reflect economic conditions throughout the specific country. It is important to know the percentage of the labor force affected and, particularly important in rural areas, the relative importance of incomes in kind and in money. The effect of any nominal wage changes on living standards will also vary with the extent to which substitution in consumption among commodities is possible and desired, since substitution could offset, at least in part, the impact of particular relative price rises. Moreover, falls in real wages may reflect declines in overall output, not only redistributions of incomes among the members of the population. Determining the relative importance of declines in total output in contrast to the magnitude of income redistribution can be an important contribution of price history to understanding political issues.

There are also interesting questions to be asked by historians of the relationship between prices and trading patterns. As pointed out, there can be different patterns of price change for goods which are not traded across international and market boundaries and those which are so traded. For traded goods, there seems to be some general uniformity of price movement across regions and markets, and for traded goods there was a similarity of prices in various markets with periodic exceptions due to extra-market phenomenon, such as tariffs, embargoes, blockades and wars. Comparisons of prices in deferent areas and regions, also permits some estimation of the degree of market integration. Since markets are linked by transportation costs, large inter-regional variation in prices suggest limited degrees of inter-penetration.[5] Discussions of the linking of prices across areas, as well as the responses to

[5] It may be argued that the change in the price of a commodity can serve as "an index to the cost of a whole range of articles", thus side stepping this question, at the possible costs of accuracy.

price variations within given regions, indicates that responsiveness to market signals and market rewards did frequently occur, but that, of course, is a testable argument in different circumstances.

VII

There has been, in historical debates, some discussion of the relationship between population increase and rising price levels.[6] This point is given heavy emphasis in the debates about price increases in sixteenth century Europe, by contemporaries as well as subsequent scholars.[7] It remains difficult, however, to follow the linking of a fully understandable relative price change for agricultural commodities to an increase in the absolute price level, without attention being paid to changes in either the quantity of money or its velocity of turnover.[8] Population increase is obviously an essential part of the explanation of a rise in relative agricultural prices, but it may no provide a satisfactory explanation for an overall-inflation. Focus on specie and money alone may not be adequate for understanding price level changes, but they cannot be ignored in analyzing the behavior of the economic system. By focusing on both sides of the exchange –what goods are sold as well as what is accepted in exchange for them– we will learn a great deal more about the social and economic interactions in a society.

VIII

There are a number of cases where a more explicit attention to the use of supply and demand analysis to explain relative price changes may have a substantial intellectual payoff. Useful examples of such explicit approaches

[6] For a useful discussion of the effect of a major transportation improvement –in this case the railroad– in reducing the dispersion of prices among regions, see Jacob Metzer, "Railroad Development and Market Integration: the Case of Tsarist Russia", *Journal of Economic History* (1974). See also Nicolás Sánchez-Albornoz, "Congruence among spanish economic regions in the nineteenth century," *Journal of european Economic History* (1974), and, on Brazil, William Summerhill, "Railroads. The Brazilian Economy before 1914" (Ph.D. thesis, Stanford University, 1994).

[7] See Ramsey *The Price Revolution*, and the review of this collection by Donald N. McCloskey in the *Journal of Political Economy* (1972). Also see Harry A. Miskimin, "Population Growth and the Price Revolution in England", *Journal of European Economic History* (1975). These recent attempts to explain the change in velocity as based upon increased urbanization and explaned market activity still leave key historical questions unanswered.

[8] See Jack A. Goldstone, "Urbanization and Inflation: Lessons from the English Price Revolution of the Sixteenth and Seventeenth Centuries", *American Journal of Sociology*, (1984), and the discussion in Peter H. Lindert, "English Population, Wages, and Prices: 1541-1913", *Journal of Interdisciplinary History* (1985).

to explaining changing prices and quantities are Robert Zevin's analysis of the growth of the U. S. cotton textile industry from 1815-1860;[9] the explicit application of demand elasticities in Robert Fogel's analysis of the impact of English famines on mortality;[10] and Andrew Appleby's study of the differential substitutability among various grains by consumers in England and France in the seventeenth and eighteenth centuries.[11]

These studies suggest that explicit incorporation of models of price behavior and the asking of different questions can offer a useful interpretative framework to discuss many issues of historical interest. While, even in the best of studies, the problems related to the use of prices in historical analysis are many, the potential rewards for historical understanding remain great.

[9] See Robert Brooke Zevin, "The Growth of Cotton Textile Production after 1815", in Robert William Fogel and Stanley L. Engerman, eds., *The Reinterpretation of American Economic History* (New York, 1971).

[10] Robert William Fogel, "Nutrition and the Decline in Mortality since 1700: some preliminary findings," in Stanley L. Engerman and Robert E. Gallman, eds., *Long-Term Factors in American Economic Growth* (Chicago, 1986).

[11] Andrew B. Appleby, "Grain Prices and Subsistence Crises in England and France, *1590-1740*", *Journal of Economic History* (1979).