

Economic statistics in historical perspective

Antónia Hüttl

PhD Theses

For today's users the availability of statistical data is self-evident. Nearly every day the mass media communicate data on growth rates, on prices, on financial positions or on stock exchange rates. Economic policy makers and research workers in applied economics are used to rely on numerical results derived from quantified analysis. Without using data in economic analysis, measured on cardinal scale, it would be impossible make any statement on the relevance of economic events, on their intensity and frequency, only their occurrence could be detected. This favourable situation exist since the mid of the 20th century. The paper presents the historical way how the present system of economic statistics has been developed.

The paper investigates the background of contemporary, internationally accepted methodology of economic statistics in economic theory. It articulates the relevant statements in methodological handbooks, mainly in the SNA1993, and detects the historical path how these fundamental concepts have been developed as described in special literature. It relies on sources of history of economic thinking, of economic history and of statistical methodology. The relevant statements of the various sources are analysed in their interrelations. Historical examples illustrates the conceptual problems.

The dissertation concludes the following findings:

1. It is widely accepted that statistics describe economic reality in an objective way. When statistical data, the conclusions derived from them are interpreted, it is mainly disregarded that the design and structure of the economic accounting is influenced significantly by economic theory. In contrast to general opinion, it is not true that economic statistics is free of theoretical assumptions, even if these assumptions are plausible and commonly accepted. This happens, because the concepts and accounting rules derive from the mainstream economic thoughts prevailing in the first half of the 20th century and used in most economic textbooks.
2. The theoretical framework constrains the scope of data validity. They do not provide information on economic "facts" outside the scope of the given theory. But the theoretical frame is indispensable, because it facilitates to understand the economic content of the data, without forcing the users to learn all the details of compilation methodology. The use of statistical data became part of our everyday life only because for most users a broad orientation in the statistical methods is in most cases sufficient, the use of statistics does not necessitate a thorough methodological knowledge.
3. Economic value is the common attribute of goods and services. The sum of value is measured in macroeconomic aggregates, the value shares of goods expressed by their

relative market prices. As economic value is a common attribute, it make sense to add together various goods and services. Statistics do not measure the way how economic value is created through exchange of market information, neither it proves the existence of value itself. It simply assumes that because relative market prices represents the value ratios, their amount is economically meaningful. The research scrutinizes the historical development of the theory of value as the prerequisite to measure and aggregate goods and services.

4. In the 17th century the representatives of the mercantilism formulated the first theory of value. They assumed that new value is created only in trade, mainly in foreign trade. They noticed the huge profits realised by foreign traders, and the amount of foreign exchange derived from it. From today perspective they did not distinguished the operating surplus and the earnings form the revaluation of the stock of goods traded. In the present economic statistics only operating surplus is recorded as new value but the part due to revaluation is excluded. Historical evidences indicate that a significant part trading profit came from holding gains on stocks of goods. Later the physiocratic views identified the creation of new value in agricultural production. In the first half of the 19th century the contribution of labour to production has been recognised as the only source of value. As the market of goods was more obvious than the market of services, it was assumed that only the production of goods and related services (transportation, trade) generates new value.
5. During the second half of the 19th century the marginalism and the theory of consumers' preferences created a broader concept of value. According to this concept all productive activities, which produce goods and services suitable to meet – directly or indirectly - the need of consumers, contribute to the creation of new value. The theory of consumers' preferences furnishes a sufficient basis for economic measurement, providing a common measure for all goods and services exchanged on the market. For non-market goods or for market goods for which the prices are directly non observable, consumer preferences do not provide a measure. The paper presents the way how statistics impute value in such cases.
6. The paper illustrates through examples from the history of Hungarian statistics how the scope of value has changed. The first estimate made in the second half of the 19th century by Gy. Kautz tried to measure national wealth, as a measure of stocks of assets expressed mainly in physical units. Later on the studies focused on income generated in the production process. The study made by F. Fellner at the end of the 19th century excludes all kinds of personal services from the concept of national income, in a similar way as the theory of labour-value disregards such activities. An other study made by M. Matolcsy and I. Varga in the first half of the 20th century includes all personal services in the concept of national income. It even makes estimates on the value of household services, which activities are outside of the production boundary in the contemporary macroeconomic statistics, at least as official macroeconomic indicators are concerned.

7. Economic value is the common attribute of goods and services, which are otherwise different in their physical characteristics, and so determines relative prices. Money i.e. national currency is used as the unit of measurement, determining the absolute level of value terms. The paper briefly summarizes the history of money in its capacity as a mean of exchange, of payments, of accounting and of store of value. These functions of money enable to express all kinds of economic phenomena, stocks and flows in an integrated way. In the paper examples taken from the economic history illustrates how these functions of money have been developed.
8. The major problem associated with using money as unit of measurement is that the value of national currency may change over time, therefore the scale of measurement is not stable. The index number theory deals with the problem how to decompose the value in a quantity component and in a numerical value representing the general price level. While it has been proved, that the problem cannot be solved for absolute levels, the changes of either the quantities or of the prices can be observed. The theoretical problem emerged in the early quantity theory of money, looking for a prove that the increase in the supply of money generates an equiproportional increase in the general price level. Since all price changes cannot be observed, a sample of price must be chosen. In the course of the discussions which method of weighting is the best, researches led to the construction of modern index numbers, a very important methods in the compilation of statistical indicators. While the comparison of statistical indicators in time became an important research issue since the beginning of the 20th century, the problems of regional comparisons of prices and volumes were for a long time neglected. This issue was put on the agenda only in the 60-ties of the 20th century. Since that time the international comparisons based on regional price indices, the so-called purchaser power parities became a crucial issue. As relative prices may vary more in spaces than in time, the alternative methods used in international comparisons have a greater influence on the results than the methods of temporal price indices.
9. From the very beginning economic thinking strived to express and compare the state of the society in numerical terms. Already in the 18th century utilitarianism was engaged in searching a standard of social happiness. Later in the first half of the 20th century the theory of social welfare functions reopened the discussion on the measurability or the comparability of social states. The paper introduces the main ideas of these approaches. While these attempts mainly failed, today the common macroeconomic indicators, like GDP or GNI are widely used as the adequate measure of economic welfare. The dissertation presents the relevance of these and similar macroeconomic aggregates. It emphasises two constraints: macroeconomic indicators do not take into consideration the impact of economic and social events outside the production of goods and services. It is evident, that human health status, life expectancy or freedom and democracy are equally important, but these attributes are difficult to express in numerical terms and it is impossible to aggregate them in a single indicator. The second limitation of macroeconomic indicators comes from the fact, that consumers' preferences are individually oriented, they disregard the possibility of interpersonal comparisons. They are not able to take into consideration for instance that a different, more equal income distribution may generate a higher level of economic welfare.

10. The dissertation briefly highlights the role attributed to empirical data and measurement in the history of economic thinking. In the early period the similarity of economics and natural sciences was emphasised, so the numerical experimentations were considered as the basic method of scientific investigations. The economists in the 17th and 18th century, like Petty and Quesnay relied heavily on data and on simple mathematical equations and tables. But later for a long period the mainstream economics considered deduction as the only way of scientific thinking, and disregarded the use of data as a tool of induction. Nevertheless this period is indispensable for the development of economic statistics, as the marginalism and the theory of the general equilibrium created the basic concepts suitable for measurement and discovered the basic simultaneous relations in the economy. Beside the concept of consumer's preferences the clarification of the concept of income, of interest, input-output tables, became important preconditions of macroeconomic measurement. The Keynesian paradigm put macroeconomic problems in the forefront and the need to analyse macroeconomic variables in order to intervene in the right time and in the right way. Although Keynes did not acknowledge the importance of statistics, his ideas led to the establishments of official statistical services, whose main mission became to compile and publish macroeconomic statistics regularly.
11. Economic research based on statistical investigations became dominant only in the first half of the 20th century. Since that time econometrics is regarded as the most important method in applied economic research. The paper expresses some reservations concerning the intensive use of statistical data in economic modelling but not taking into consideration the fact, that statistical data are relevant only within a theoretical frame. Probably the most important limitation of today's macroeconomic system is that it assumes a relative closed national economy, where majority of transactions are performed among resident economic agents. The specialities of international transactions are less detailed elaborated. It impedes to analyse the various forms of globalisation and its impact.
12. Since the mid of the 20th century statistical data collection became a regular work of national governments. Establishing the systems of official statistics was a basic precondition for the rapid development and extension of economic statistics, as national governments and international organisations provided sufficient sources to elaborate the system. As a background the paper presents the historical path, how sovereigns and later elected governments used statistical data in economic policy making. Population and agricultural censuses were in history the first use of statistics for policy making, mostly to forecast expected tax revenue. Border customs regularly provided data on foreign trade. But these early data sources were either occasional, when censuses were organised, or one had to make use of data available from administrative sources. Before the second half of the 20th century they were hardly any direct surveys tailored for the compilation of predefined economic concepts.
13. In the dissertation a separate chapter is devoted to the analysis of historical macroeconomic time series. The research highlights some methodological problems

which impede the comparison the level and the growth of economic development in a historical term. As consumers' preferences changes, the share of household services varies, the importance of free goods, (like hunting, fishing, collection of wood for heating, etc.) diminishes, the content of macroeconomic indicators became fundamentally incomparable. In some historical periods wealth was obtained more through robberies and wars, than by production. Uncompensated seizures fall outside of the boundary of welfare as understood in national accounts.

14. The study suggests comes to the conclusion the similar problems impede the compilation of comparable macroeconomic indicators for the period of centrally planned economies. The main problem is that centrally regulated prices were inappropriate to measure consumers' preferences. That implies the available basic data are insufficient the reproduce the right measure of macroeconomic development. The study suggests a way of revising the figures for the Hungarian economy making use of international comparisons and evidences of economic history.