

# Contents

<b>1 Introduction: Why Write About Value in the Context of National Accounts?</b>	<b>1</b>
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## **Part I Nominal Accounts**

<b>2 Transactions and Their Economic Functions</b>	<b>11</b>
Basic concepts and principles	11
Value as a category of statistical measurement	11
The transactor/transaction principle of value realisation	13
The theory of pure transactions	18
Classifying transactions	18
Terminology in the manuals of national accounting	22
The duality of economic events and its reflection in the operations of accounting	24
The analytical distinction	24
The historical struggle between the concepts of transaction and transformation	29
<b>3 Institutions and Their Economic Activities</b>	<b>32</b>
The units of observation	32
Institutional units: the economy and its sectors	32
Production units: industries and branches	36
The reason for the duality of accounting concepts	39
Economic activity and the definition of production	40
The transactor/transaction principle: determination of the production boundary	40
The third-person principle	43
The utility or 'wants' principle	46
The compromise of the SNA	49
At the boundary of economic production: quasi-corporations, self-employment, and informal activity	54
The sequence of institutions within the national accounts	54
The concept of informal production	58
Searching for a line of demarcation	61

## **Part II Real Accounts**

<b>4 The Index Number Problem</b>	<b>67</b>
Methodological introduction: the charms of realness	67

The standard presentation of money value in textbooks and journals	67
The new vision achieved in the SNA	70
Comparing value over space: the axiom of transitivity	73
The world on a spreadsheet	73
Three kinds of value	78
Comparing value over time: the axiom of temporal identity	80
The historical lesson of the index number problem	80
The SNA's solution: the chained Fisher index	85
The Divisia index	89
Theoretical conclusions	90
The relativity of units in economic measurement	90
Equilibrium between markets	93
The decomposition of value and the problem of additivity	94
The integration of measurement over space and time	97
A principle of macroeconomic value theory: <i>omnibus inclusis</i>	99
<b>5 The Quality Problem</b>	<b>101</b>
The integration of price statistics and national accounts	101
Vision of the 1993 SNA	101
The task of theory	103
The basic concepts and practices of statistical price observation	106
Classifying transactions	106
Observing prices	108
The representative commodity	112
Three basic methods of working a price panel	112
Approximative techniques	114
The meaning of quality and qualitative identity	116
Price comparison in space	119
Quality and price	121
<b>Part III Theory of Value</b>	
<b>6 Elements of Value Theory</b>	<b>125</b>
Preparing the ground for the macroeconomic–microeconomic contrast	125
Axioms of the microeconomic theory of value	130
Axioms of the macroeconomic theory of value	135
<b>7 Value Theory in the National Accounts</b>	<b>142</b>
The meaning of volume and price indices: explaining non-additivity	142
The relationship between volume, real value and value of money: measuring scarcity	145

Nature and GDP: the essence and appearance of economic processes	148
<b>8 Value Theory in Economics</b>	<b>155</b>
Functional analysis	155
The undefined function of utility	155
The misdefined function of production	159
Conceptual analysis	162
Equilibrium in product markets	162
Equilibrium and disequilibrium between product markets	166
Links to the classical theory of value	168
Asymmetry of labour and capital	168
The distinction between value and price	171
<b>9 Open Questions</b>	<b>178</b>
<i>Notes</i>	180
<i>Bibliography</i>	183
<i>Index</i>	187

# 1

## Introduction: Why Write About Value in the Context of National Accounts?

The purpose of combining national accounts and the theory of economic value is explained in this chapter. The main argument is that the concepts of a theory should comply with the standards of their measurement, which in economics are those of accounting.

A book is written to promote knowledge and truth, but it will open minds only if it is entertaining. Thus, dear reader, my wish is to entertain you.

Value theory tells us what is good and how good it is, what we appreciate and why, and that all these value judgements are actually measured in our economy and how this is done. What is wealth, and what is well-being? Why are we willing to spend money on something, and what is really spent if money is spent? Economic and moral questions seem to be inseparable in practice.

There are some conflicts between statistics and economics, conflicts such as the one exemplified by a famous hunting conundrum:

If it usually costs twice the labour to kill a beaver which it does to kill a deer, one beaver should naturally exchange for or be worth two deer? It is natural that what is usually the produce of two days, or two hours, labour should be worth double of what is usually the product of one day's or one hour's labour.

This law of value is from Adam Smith (1776), the founding father of our economics science.<sup>1</sup> As economists, however, we have been trained to reject this thesis, or more precisely to accept it only on the condition that the average cost equals the marginal cost of hunting these animals and this in turn equals the marginal utility of eating them. This value theory is firmly established in first-year economics. However if you want to put the theory to statistical test with the help of the national accounts, you may find the price of the beaver and the price of the deer in the accounts, but there will be no reference to marginal cost or marginal utility to explain them. You may even find that the prices are estimated on the basis of hours worked without any

knowledge of marginal cost or utility conditions. More generally, it seems that the national accounts do not submit to the marginal theory of value, and it may be entertaining to investigate this.

As scientists we have been trained to view measurement as a means of providing objectivity. A measured figure is true and provides knowledge, we are told, unlike value judgements, which are immeasurable. Thus to say that a beaver should cost twice as much as a deer is rejected as a scientific statement because it is a value judgement. But if in the process of establishing a national price for beaver the price observer, on her or his visit to the butcher, finds the beaver to be of much lower quality than before, and acts accordingly, is that not a value judgement? The interesting question here is: what has economic theory to offer in respect of the norms and objectivity that are involved in measuring an economic figure? National accountants have come to the point where they politely say 'Not much'.

Since the most satisfying way of entertaining an audience is through beauty, this book also makes an effort in that direction. The beauty of a theoretical construct is its simplicity. To be able to prove that a number of consumers with individual preferences and a number of producers of different goods and services can be joined in a common equilibrium of quoted prices and quantities produced and consumed is a beauty of intellectual insight that has stimulated the advancement of microeconomic theory in many directions. In a similar fashion, this book endeavours to reveal the beauty of the national accounts – , contained in their axiomatic reconstruction – and to advertise it to the general economist.

It must be said – and deplored – that the disciplines of economics and national accounting have parted. At the beginning of the national accounts project many great theorists put their minds to the national accounts, and helped to bring them to life but today the topic is almost forgotten in economic research and teaching. It is treated as purely technical and of no further theoretical interest. This is practical in many respects, but in the field of value theory the discrepancies are too strong to be left unattended.

It so happens that there is only one laboratory for the economist – the current economy – and there is only one tool for measuring the latter – the national accounts. So any economist who wants to use figures must use the national accounts. Whatever theory of value economists have in mind or want to prove when working with such figures, they are constrained to the meaning that national accountants have imposed on them when trying to make a representation of the economy that can be called true. Not to understand the operations through which the numbers have been established is like standing in a kitchen and seeing how much of a substance is in a jar, but not knowing what that substance is. Public discussions of a green national product or the government deficit have largely been nourished by such lack of understanding.

The 1993 SNA (the system of national accounts adopted by the five major international economic organisations), with over 700 pages, is an intractable piece of work and far too heavy to take to an economic conference. But at the same time it is the edifice within which every economic phenomenon is housed, and will continue to be housed in the future. It will hardly be fully read or understood by any one person, but it will provide the basis of study for many. And it has a silent message: it hints that the microeconomic theory of value is insufficient for guiding and interpreting the national accounts.

What is unsatisfactory about the microeconomic theory of value for national accounting? It cannot be lack of beauty, because the general equilibrium model is as beautiful as Euclidian geometry. The difference between the two is that the latter incorporates a prescription for measurement whereas the former does not. Rulers and compasses are handed to students of geometry from their first day. Microeconomics, however, does not even deal with cardinal numbers, much less provide the tools to establish them.

The disappointment of national accountants and statistical practitioners with the microeconomic theory of value derives from the failure of its concepts to operate at the macroeconomic level. Let us look at two cases in point. The microeconomic model is based on the concept of a fully homogeneous commodity. This means that wheat in Chicago is a different commodity from wheat in New York, and that wheat today is different from wheat tomorrow. Applying this idea to the national accounts makes measurement virtually impossible. The accounts are based on the assumption that these four microcommodities are actually a single commodity observed under different circumstances. Otherwise there can be no aggregation in space or over time. Another problematic concept is that of money. Money is not needed to define value in microeconomic theory, as value is defined only in terms of relative prices. Money works simply as a numéraire and can be replaced by any other commodity. There is no explanation of the absolute price of a commodity on the market. But absolute prices are what statisticians find at their commodity outlets, and what they must explain. They need a value theory of absolute prices.

Where, then, are we heading in this book? Let us point the way with an analogy. When in the eighteenth century the science of mechanics triumphed over religion the French mathematician Laplace proposed an ideal of mechanics. If one could determine the location,  $q$ , and momentum,  $p$ , of all particles of matter one would be able to predict the future of the world. The general equilibrium model is of the same ilk, with the quantity  $q$ , and price,  $p$ , of an almost infinite number of commodities determining the state of an economy. Physics subsequently turned to thermodynamics, where new variables such as pressure, volume and temperature were defined for the macro level of investigation but had no meaning for an individual particle. In a similar way practical economics has turned to the national accounts

statistics to measure and define its macro variables, and it is not evident that micro variables have a place there. At any rate, it is appropriate that the theory of value should follow suit.

Fortunately we are not alone in this endeavour. We need not postulate a new theory, merely recover what others have crafted before us. The micro-economic theory of value followed on the heels of classical value theory, which has since lived in the shadows of the theoretical mainstream. The striking conceptual departure with which the marginalist theory of value buried its predecessor is captured by another famous quotation from Adam Smith:

The word value, it is to be observed, has two different meanings, and sometimes expresses the utility of some particular object, and sometimes the power of purchasing other goods which the possession of that object conveys. The one may be called 'value in use'; the other 'value in exchange'. The things which have the greatest value in use have frequently little or no value in exchange; and, on the contrary, those which have the greatest value in exchange have frequently little or no value in use. Nothing is more useful than water but it will purchase scarce anything; scarce anything can be had in exchange for it. A diamond, on the contrary, has scarce any value in use but a very great quantity of other goods may frequently be had in exchange for it.<sup>2</sup>

Before we decide whether this paradox be explained by Gossen's laws, let us pose a question. In what units is the comparison made? Can we generalise the above to other commodities and ask, for example, whether flowers have greater purchasing power than flour, or bricks have less purchasing power than beds? Generally speaking, is it meaningful to compare prices between goods and describe them as lower or higher, given that each price refers to a different physical unit? This is the reason, incidentally, for which the micro-economic commodity space cannot really be called Euclidian. As each dimension is subject to a different unit of measurement, the space lacks dimensional homogeneity, so the Euclidian concept of geometrical distance does not apply.

We shall investigate the above questions later in the book. Suffice it here to say that the possibility of two different concepts of value existing side by side, such as value in use and value in exchange, is an idea that microeconomic theory does not allow and its founders were proud of doing away with. The national accounts, however, are not only capable of but are also compelled to employ more than one system of values. They may have something to add to, as well as drawing from, the knowledge that was exposed intuitively, albeit less scientifically, in the earlier literature.

Going back to the theory that prevailed before the marginalist revolution means exhuming the classical theory of value. As it has been under the

ground for a long time, its remains may not look appealing, and a lot of imagination and controversial interpretation will be required to piece them together.

The principle advantage of classical value theory is that it depicts value largely as a social relationship determined by continuous reproduction and social norms of consumption. Classical economists could not conceive of value existing without money, and the idea that commodities were not homogeneous and prices were highly variable was the norm in this pre-industrial world.

We do not intend to prove that classical theory is right and microeconomic theory is wrong, just to raise a grain of doubt about some of the charges for which classical theory was hanged in the rise to power of the marginalist revolution. With the hindsight gleaned from today's national accounts, arguments that seemed convincing then have lost some of their force today. Also, the fact that Marx is counted among the classical theorists shall not deter us, even if he is the alleged father of the material product system of accounts and this has been given the sack by the SNA in the course of globalisation. Remember that our aim here is to entertain rather than reveal the truth, although the two are not necessarily incompatible.

The national accountant may find our presentation of the accounts, by their very abstraction, oversimplistic and their interpretation not in accordance with his or her own, while discerning no advantage in loading them with what appears to be an unnecessary complex theory of value. For the economist, who rarely probes into the national accounts anyway, the conceptual finesses of the accounts will appear as statistical noise or a cloud of smoke that blurs an otherwise lucid theory without adding anything essential to the understanding of economic behaviour. And that a theory of value that so beautifully convinced generations of economists should be challenged by statisticians is likely to be regarded by economists as a sign of disobedience, if not a lack of knowledge, rather than as a contribution to their own work. But if theory is said to perform the task of setting up hypotheses – that is, conditional statements linking possible premises to necessary consequences – it is up to the statistical operation to determine whether these statements are facts. If the concepts within which the theory is set are other than those which can be measured in a capitalist economy, the statements have little meaning. It is true that compliance between theory and measurement has always been called for, but this has been a one-way exhortation: statisticians, please follow the right road, do what theory tells you and what you have learned at school! The entertaining point is to reverse the imperative and to assume that statisticians know what they are doing and which concept of value rules our economies (because they measure it), while the theory of value is still roaming about in a pre-accounting world, needing some adjustment to modern empirical techniques.

Since this book is meant to traverse the path from national accounts to the theory of value, its structure came naturally. It begins with a nutshell presentation of national accounts, reducing the rules and recommendations of national accounting to their basic principles and axioms (Chapter 2). The first principle in a statistical enterprise is that the object of observation must be defined. What is it that is to be measured by means of national accounts statistics? Naturally it is the values transacted between the units of an economy. What precisely these transactions are is the first topic to be investigated, and this will also reveal something about the values, being transacted. Chapter 3 turns to the economic agents who run the economy and transmit their value figures to the economic institutions of a society. Since it is impossible to compile individual reports for each institutional unit, it is necessary to classify and aggregate them in the process of data collection. This has repercussions on their meaning. From the data on value transactions between economic institutions the accountant derives information on the value of the production of the economy as a whole, that is, its gross domestic product (GDP). This presupposes the prior definition of a production boundary, and as this is a controversial issue some pages need to be devoted to unravelling the arguments. Some of the difficulties are due to the unreasonable application of the microeconomic theory of production to the macro level, and would disappear if a truly macroeconomic theory were applied.

The national accounts also measure income. Here the national accounts are more easily interpreted by means of the classical theory of value than by its microeconomic successor. In the national accounts, national income derives solely from national production. Asset increases due to holding gains – that is, pure exchange mechanisms – lie outside the income accounts. This is a Smithian rather than a Walrasian income concept. One may hold the view, of course, that the income concept is wrong for this very reason. But it is more entertaining to look at it the other way, and to ask why national accountants pursue the classical concept.

Putting together transactions and institutions is principally done in nominal terms. For the period and the territory under consideration there is assumed to exist a common, homogeneous unit of accounting carrying one and the same value through all transactions. But over more than one period of time and for other territories this assumption is counterfactual. We need to do accounting in real terms to enable comparisons of economic variables over and through these elementary categories of human perception.

This issue defeats microeconomic theory, which has never managed to provide a satisfactory recommendation for this objective of measurement, and the issue has thus been dubbed a ‘problem’. This problem is twofold and relates to statistical aggregation in a given classification. The index number problem addresses heterogeneity between groups or classes (see Chapter 4)

and the problem of quality change (Chapter 5) concerns heterogeneity within a class, both of which are familiar to statistical specialists in price measurement but hardly recognised by the generalists of value theory. It will be entertaining to show that these so-called problems have been effectively solved by the procedures used since the adoption of the 1993 SNA, if one relaxes certain of the normative assumptions that constitute microeconomic value theory.

Having presented the frame work of the national accounts in Chapters 2 to 5 we then discuss the insights gained into value theory. To pave the way it is necessary to identify the differences that exist between the two theories. We do this by juxtaposing the national accounting axioms with the axioms of microeconomic value theory, a standard representation of which has been achieved by Debreu. The juxtaposition of the two sets of axioms (Chapter 6) will help clear the path to a truly macro (that is, aggregate) theory of value. This goal can be approached in two ways. One is to apply the concept of value directly to the national accounts when interpreting their results. This seems a strange suggestion given that all national accounting figures are in values. But this simple fact has not really been recognised in some of the standard interpretations, especially in connection with the new concern of ecological economics (Chapter 7). The other way is by means of the classical theory of value. While it certainly cannot be said that the classical theory holds the entire key, it contains many elements of thinking that are macro-economic in nature, and thus provides fruit for a modern national accounting value theory.

There is probably no single reader with a professional interest in all chapters. The enlightened reader will choose which to read and which to skip over. National accountants may occupy themselves with Chapters 2 and 3, price statisticians with Chapters 4 and 5, and value theorists with Chapters 6 to 8. Each will find ample material for debate. But the debate lies not within each field, but between them. The theory defended in each field cannot be justified by arguments from within that field, although these must at least be plausible, but from the interconnecting fields as this is an interdisciplinary venture. And the presentation in this introduction of two quotes from Adam Smith was not an arbitrary choice. Adam Smith stood for unity of observation and reasoning, and in spite of the progress that has been made since his time in terms of thinking and methods his problems are still ours, as is his inspiration in dealing with them.

This book has not been written in one stroke. Given the complexity of the subject matter it seemed advisable to pick out particular chapters and publish the material in separate articles in advance in order to develop and test the ideas. The feedback from these exercises has been incorporated here. I am grateful to Anne Harrison who read and criticised the whole book. Her comments led to major improvements in the arrangement and ordering of the text. Keith Povey did an excellent job in copy-editing, assuring

accessibility not only to the professional but also to the layman in the field. My greatest recognition goes to Nancy and Richard Ruggles, on the one hand, and András Bródy, on the other, from whom I not only learnt the fundamentals of what is presented here, but whose continuous interest and support of this endeavour over many years helped to overcome all obstacles.

We close this introduction with an allegory. It was half a century ago that Richard Stone drew up his first design for the new national accounts. He was not concerned with the theory of value, taking it for granted in its textbook form. Piero Sraffa, at the same time but independently, developed his value theory of the production of commodities by means of commodities, not caring about its measurement and perhaps taking it for granted. Both were working in Cambridge, one on the left bank of the River Cam, at the Department of Applied Economics, the other on its right, at Trinity College. Perhaps the time has now come to try to bridge the Cam.

# Index

- Abraham-Frois, G. 125, 126  
absolute prices 3  
absolute value 13, 171–3  
accrual accounting 24  
active adjusting 15  
activity, economic 33, 34, 37  
  and definition of production 40–54  
additivity 86, 89  
  explaining non-additivity 142–5  
  problem of 94–7  
agents, economic 32–3, 132, 136  
aggregation problem 48, 132  
agricultural sector 150  
appearance 148–54  
articulation of flows 26–9, 31  
assets and liabilities 14–15, 33  
asymmetry, flow 168–70  
axioms  
  macroeconomic value theory 135–41  
  microeconomic value theory 130–4,  
  140  
  temporal identity 80–90, 90–2, 156  
  transitivity 73–80, 90–2
- balance sheet 14–16  
base independence 85, 90–2  
base year dependency 84–5  
basic classes of products 107–8, 108–9,  
  111  
Becker, G.S. 127  
Berelli, E. 125, 126  
Bochove, C.A. van 39  
branches 36–8  
Bródy, A. 8, 126, 127, 128, 174, 175  
Brümmerhoff, D. 48
- Calzaroni, M. 60  
capital 152–3  
  asymmetry of labour and capital  
  168–70  
  production function 159–62  
cash basis 23  
*ceteris paribus* 99  
chained Fisher index 84, 85–9, 91–2
- Chapron, J.-E. 48  
Choudhury, U.D.R. 58  
circuit of economic flows 99, 152–3  
  asymmetry of labour and capital  
  168–70  
circuit of material flows 154  
circularity 83, 88–9  
  missing *see* path dependency  
classical value theory 4–5, 7, 11, 12–13,  
  126–7  
  national accounts and 168–77;  
  asymmetry of labour and capital  
  168–70; value and price 171–7  
classification 93  
  cross-classification 37–8  
  transactions 18–22, 106–8  
Cobb–Douglas production function  
  159–60  
coherency 99–100  
Colombo 61  
commodities 3, 137–8  
  representative commodity 108,  
  111–12, 112–19, 120–1  
  sales of 20, 21  
  space of 130–2  
  standard commodity 175, 177  
compensation of employees 42–3  
completeness 99–100  
comprehensive production 46–9  
concealed production 52, 54  
concepts, theory and 103–4  
consumer price index 13, 103, 107, 146,  
  172–3  
consumers 133  
consumption 35–6, 64, 139, 168–9  
  duality of economic events 24–9  
  expenditure 73–8, 97–8  
core of pure transactions 29–31  
cross-classification 37–8  
currency value 139  
  *see also* money
- Debreu, G. 125, 126, 127, 130–3  
decomposition of value 94–7

- Diewert, W.E. 81, 163  
 direct price comparison 113, 114  
 discontinuation of outdated items 113, 114  
 disequilibrium 80, 166–8  
 distributive transactions 19, 20–2  
 Divisia index 86, 89–90, 155–6, 157–8  
 do-it-yourself activities 52, 53–4  
 domestic and personal services 44, 52, 53, 54  
 dual sectoring 37–8  
 duality  
   accounting concepts 39–40  
   economic events 24–31  
   essence and appearance of economic processes 148–54  
 due for payment basis 23
- Eck, R. von 29  
 ecological circuit of material flows 154  
 economic activity *see* activity, economic  
 economic agents 32–3, 132, 136  
 economic development 12–13  
 economic events 15–18  
   duality 24–31  
 economic processes: essence and appearance of 148–54  
 economic territory 33–4  
 economic theory–statistics relationship 103–5  
 economic transactions 19–22  
 economy 12, 132, 135–6  
   and its sectors 33–6  
 Eichhorn, W. 82, 88  
 Eisner, R. 41, 49  
 EKS (EU) index 73, 74, 80  
 elementary aggregates 110, 111  
 elementary price index 110, 111  
 employment, paid 41–3, 44–5, 53  
 environment 151–4  
 equality 18  
 equilibrium 133–4  
   between markets 93–4  
   disequilibrium 80, 166–8  
   general equilibrium theory 3, 93, 127  
   in product markets 162–8  
 equivalence in use 120  
 ESA (EU) 22–3, 116–17  
 essence 148–54  
 establishments 30, 36–8  
 events 15–18  
   economic *see* economic events  
 exceptions 50–1  
 exchange value 4, 134, 138–9  
 expenditure  
   consumption expenditure 73–8, 97–8  
   shares 167  
 extension, principle of 117
- factor reversal test 83, 87–8  
 financial assets 14–15  
 financial institutions 34–6  
 financial transactions 19–22  
 Fisher, I. 70, 80–1  
 Fisher index, chained 84, 85–9, 91–2  
 flexibility 29  
 flows  
   articulation of 26–9, 31  
   circuit of economic flows 99, 152–3, 168–70  
   circuit of material flows 154  
 foreign exchange markets 73–8  
 formal economy 59, 60  
 formal-informal production boundary 61–4  
 Frank, R.H. 47  
 Frenkel, M. 49  
 functional analysis 39–40, 155–62  
   production function 159–62  
   utility function 155–9
- Geary–Khamis index 72–3, 74–8, 79–80  
 general equilibrium theory 3, 93, 127  
 ghost firms 33  
 Goldschmidt-Clermont, L. 64  
 goods 43–5  
 Gorter, C.N. 17  
 government institutions 34–6  
 gross domestic product (GDP) 6, 29, 30, 48, 146  
   nature and 151–4
- Harrison, A. 7  
 hedonic hypothesis 115  
 heterogeneity 129, 143–5  
 Hicks, J. 70, 81  
 Hill, T.P. 43  
 Holub, H.-W. 49  
 homogeneity 3, 105, 119, 128  
 homogeneous production units 38

- Horvat, B. 125–6
- household economy 59, 60
- households 34–6, 56–8, 107–8
- housework 44, 52, 53, 54
- hypotheses 5
- ideal index 81
- identical items 109–10, 116–17, 120
- identity
- qualitative 116–19
  - temporal 80–90, 90–2, 156
- illegal production 52, 54
- implicit price indices 70–1, 102
- imputations 24–9, 29–31
- in kind transactions 16, 17, 18, 25–6
- income 6, 28–9
- asymmetry of labour income and capital income 168–70
- income transactions 19, 20–2
- incorporated institutions 55–8
- index number problem 6–7, 67–100
- comparing value over space 73–80; three kinds of value 78–80
  - comparing value over time 80–90; Divisia index 89–90; historical lesson of index number problem 80–5; SNA's solution 85–9
- decomposition of value and problem of additivity 94–7
- equilibrium between markets 93–4
- integration of measurement over space and time 97–8
- new vision in SNA 70–3
- omnibus inclusis* 99–100
- relativity of units 90–3
- standard presentation of money value 67–70
- indirect method 114–15
- industries 36–8
- inflation 71, 164, 171–2
- informal production 58–61
- boundary with formal production 61–4
- information, lack of 116–17
- input–output analysis 174–5
- institutional approach to national accounting 39–40
- institutional units 30, 32–6, 37–8
- institutions 6, 32–64
- economic activity and definition of production 40–54; compromise of SNA 49–54; third-person principle 43–5; transactor–transaction principle 40–3; utility or wants principle 46–9
- production boundary 54–64; formal–informal demarcation 61–4; informal production 58–61; sequence of institutions within the national accounts 54–8
- units of observation 32–40; duality of accounting concepts 39–40; institutional units 32–6; production units 36–8
- integrability 157–8
- interest rate 159–62
- International Association for Research in Income and Wealth 30
- international comparison 73–80, 97–8, 119–21
- International Comparison Handbook* (UN) 120
- International Comparison Project (ICP) 74
- intransitive events 16–17
- invariable measure of value problem 150
- items of observation 109
- identical items 109–10, 116–17, 120
- Jevons, W.S. 134
- John, K.D. 49
- Kendrick, J.W. 49
- Keynes, J.M. 70, 127, 128
- Kravis, I.B. 73, 81, 103, 104
- labour 133, 152–4
- asymmetry of capital and labour 168–70
  - paid 41–3, 44–5, 53
  - production function 159–62
- labour value 172, 174–6
- Lancaster, K. 47, 48
- Laplace, P.S. 3
- Larrain, F.B. 48
- Laspeyres index 71, 80–1, 81–2, 91, 92, 144–5
- and chained Fisher index 84–5, 86–7
- leisure 44–5

- Lipsey, G.L. 47, 48  
 liquid assets 14–15  
 locality 37
- macroeconomic value theory 7, 179  
   axioms of 135–41  
   classical theory of value and 168–77  
   contrast with microeconomic value theory 125–30, 140  
   *omnibus inclusis* 99–100  
   *see also* national accounts
- marginal utility 1–2, 134  
 marginalist school 11, 127, 134  
 marginalist theory of value 1–2, 4, 171, 174
- market production 41, 46  
   classification of institutions 55–8
- markets 116–17  
   equilibrium between 93–4  
   equilibrium in product markets 162–8
- Marshall, A. 70
- Marx, K. 5, 70, 150–1
- material flows, circuit of 154
- McConnell, C.R. 47
- Meade, J.E. 127
- means of payment 16, 67–8, 78
- microeconomic value theory 3–4, 7, 68–9, 99, 142–3, 179  
   axioms of 130–4, 140  
   contrast with macroeconomic value theory 125–30, 140  
   price 104–5, 121–2, 128–9, 133–4  
   production and products 137–8
- monetary transactions 16, 17, 18
- money 3, 12–13, 16, 26, 105  
   value of 139; standard presentation 67–70; volume, real value and 145–8
- Montmarquette, C. 163
- Mulder, N. 59
- Müller, F. 17
- mutual agreement 18
- national accounts  
   and classical value theory 168–77  
   fields of investigation 137–8  
   integration of price statistics and 70–3, 101–5  
   purpose of combining value theory and 1–8
- terminology 22–4  
 value theory in 127, 129–30, 142–54;  
   meaning of volume and price indices 142–5; nature and GDP 148–54;  
   volume, real value and value of money 145–8  
*see also* index number problem;  
   institutions; quality problem;  
   transactions
- national price levels 73–8
- nature 151–4
- neo-Ricardians 127, 173
- net financial worth 19–22
- net worth 14, 15
- new product bias 85
- nominal expenditure values 78–80
- non-additivity 142–5
- non-financial assets 14–15
- non-financial corporations 55–6
- non-financial institutions 34–6
- non-liquid assets 14–15
- non-market production 46–9, 51, 52, 54  
   classification of institutions 55–8
- non-produced commodities 138
- non-profit institutions 34–6, 55–8
- Nordhaus, W.D. 46, 48
- objective value 11–13, 171–3
- Oladoye, J.O. 61
- omnibus inclusis* 79, 99–100
- output 26, 45, 47
- own-account housing services 52, 53–4
- own-account production 50–1, 52–3, 54
- owner-occupiers 50
- Paasche index 71, 80–1, 81–2, 85, 86–7
- Pagnossin-Aligisakis, E. 64
- paid labour 41–3, 44–5, 53
- Pakistan 61
- panels *see* price panels
- parallel markets 116–17
- parallel observation (splicing) 112–14, 115–16
- passive recording 15
- path dependency 83, 88–9, 118, 165  
   utility function 157–9
- payment 16, 67–8, 78
- payment due basis 23
- plans of action 132

- points of sale 108, 110, 111
- post-office boxes 33
- preferences 131–2, 167
- price 94, 128–9, 178
  - comparison in space 119–21
  - equilibrium in product markets 162–8
  - microeconomic value theory 104–5, 121–2, 128–9, 133–4
  - national accounts 129, 142–5
  - pure price change 102, 109, 121–2, 145, 147, 162–3
  - quality and 121–2
  - relative 121, 147
  - and value 171–7
- price discrimination 116–17
- price panels 110, 111–12
  - methods of working 112–14;
  - approximative techniques 114–16
- price statistics
  - concepts and practices 106–12;
  - classifying transactions 106–8;
  - observing prices 108–12
- integration with national accounts 70–3, 101–5; role of economic theory 103–5; visions of 1993 SNA 101–3
- producers 133
- product markets, equilibrium in 162–8
- product transactions 19, 20–2, 26
- production 6, 32–64, 168–9, 179
  - accounting for 24–9
  - economic activity and definition of 40–54; compromise of SNA 49–54; third-person principle 43–5; transactor/transaction principle 40–3; utility or wants principle 46–9
  - informal 58–61
  - macroeconomic value theory 136–7
- production boundary 40–3, 46, 54–64, 150–1
  - informal production 58–61; formal–informal demarcation line 61–4
  - quasi-corporations and self-employment 54–8
- production function 159–62
- production prices 174–6
- production units 32–3, 36–8
- products 45
  - basic classes 107–8, 108–9, 111
  - macroeconomic value theory 137–9
- profit, undistributed 28
- profit-making institutions 55–8
- property 33, 35, 36, 137–8
- property worth 16–17
- proportionality of value and quantity 171, 173–7
- purchasing power parity 73, 75, 79–80, 147
- pure price change 102, 109, 121–2, 145, 147, 162–3
- pure transaction core 29–31
- qualitative identity 116–19
- quality
  - meaning of 116–19
  - and price 121–2
- quality problem 7, 72, 101–22
  - integration of price statistics and national accounts 101–5; task of theory 103–5; vision of 1993 SNA 101–3
  - price comparison in space 119–21
  - representative commodity 112–19;
  - approximative techniques 114–16;
  - methods of working a price panel 112–14
  - statistical price observation 106–12;
  - classifying transactions 106–8;
  - observing prices 108–12
- quantity 128–9
  - proportionality of value and 171, 173–7
- quasi-corporations 55–6
- Quesnay, F. 150, 151
- Rashidi, A. 62
- real value 67–70, 78–80
  - SNA 70–3
  - and volume 95–7; and value of money 145–8
- regularity 136–7
- Reich, U.-P. 149
- relative price 121, 147
- relativity
  - of units in economic measurement 90–3

- relativity (*cont'd.*)  
 of value 68, 150; *see also* index  
 number problem; quality problem
- representative commodity 108, 111–12,  
 112–19, 120–1  
 quality and qualitative identity  
 116–19
- reversibility 83, 87–8
- Ricardo, D. 13, 70, 128, 150, 171–3,  
 177
- Ruggles, N. 8, 30  
 Ruggles, R. 8, 30
- Sachs, D.J. 48  
 Salvatore, D. 47  
 Samuelson, P.A. 46, 48  
 saving 169–70  
 scarcity 79–80, 95–7, 178–9  
 volume, real value and value of  
 money 145–8
- sectors 32–6, 37–8
- self-employment 56, 57  
 self-help economy 59, 60
- Séruzier, M. 48
- services 43–5
- shadow economy 59–60
- single deflation 146
- Smith, A. 1, 4, 7
- SNA 3, 82, 127, 130  
 chained Fisher index 85–9  
 integrated price and volume measures  
 70–3  
 production boundary 45, 46, 58–9;  
 compromise 49–54  
 quality problem 101–3, 106  
 transactions 18, 23, 24; debate over in  
 fourth revision 29–30
- space  
 of commodities 130–2  
 comparing value over 73–80, 90–2;  
 three kinds of value 78–80  
 disequilibrium 168  
 integration of measurement over space  
 and time 97–8  
 price comparison 119–21
- splicing 112–14, 115–16
- Sraffa, P. 8, 127, 128, 175, 177
- standard commodity 175, 177
- statistical index number theory 81
- statistics–theory relationship 103–5
- Steiner, P.O. 47, 48
- Stobbe, A. 14, 20
- Stone, J.R.N. 8, 127, 135
- store of value 67–8, 78–80
- Studenski, P. 50
- subjective value 11–13
- subsistence economy 50, 59, 60–1
- substitution bias 85
- surplus 150–1, 153
- Teichert, V. 59
- temporal identity, axiom of 80–90,  
 90–2, 156
- territory, economic 33–4
- theory–statistics relationship 103–5
- third-person principle 40–1, 43–5
- time 64  
 axiom of temporal identity 80–90,  
 90–2, 156  
 integration of measurement over space  
 and time 97–8
- time of recording 23–4
- Todaro, M.P. 61
- Tornqvist index 87, 90, 158
- total utility 134
- transaction value 118, 129
- transactions 6, 11–31, 33, 135, 152–3  
 classification in statistical price  
 observation 106–8  
 duality of economic events 24–31;  
 analytical distinction 24–9;  
 historical struggle between concepts  
 of transaction and transformation  
 29–31  
 theory of pure transactions 18–24;  
 classifying transactions 18–22;  
 terminology in national accounting  
 22–4  
 value as a category of statistical  
 measurement 11–13
- transactor/transaction principle 13–18,  
 30–1, 32  
 production boundary 40–3
- transformation problem 174
- transformations 16–18, 153  
 duality of economic events 24–31;  
 analytical distinction 24–9;  
 historical struggle between concepts  
 of transaction and transformation  
 29–31

- transitive events 17
- transitivity, axiom of 73–80, 90–2
- Tuinen, H.K. van 39
- undistributed profit 28
- unincorporated institutions 55–8
- unit of accounting 67–8
- United Nations (UN) 82, 120
- urban informal economy 60–1
- use value 4, 134, 138–9
- utility
- definition of production 40–1, 46–9
  - marginal 1–2, 134
  - total 134
- utility function 155–9
- value
- as a category of statistical measurement 11–13
  - comparing over space 73–80, 90–2; three kinds of value 78–80
  - comparing over time 80–90, 90–2; chained Fisher index 85–9; Divisia index 89–90; historical lesson of index number problem 80–5
  - currency value 139
  - decomposition of 94–7
  - of money *see* money
  - and price 171–7
  - transactor/transaction principle of value realisation 13–18, 30–1, 32, 40–3
- value added 170
- value theory 125–41, 155–77
- classical *see* classical value theory
  - development of 126–8
  - equilibrium in product markets 162–8
  - functional analysis 155–62; production 159–62; utility 155–9
  - macroeconomic *see* macroeconomic value theory
  - marginalist 1–2, 4, 171, 174
  - microeconomic *see* microeconomic value theory
  - in national accounts 127, 129–30, 142–54; nature and GDP 148–54; volume and price indices 142–5; volume, real value and value of money 145–8
  - purpose of combining national accounts and 1–8
- value transactions *see* transactions
- value transformations *see* transformations
- Vanoli, A. 30
- variety 108–9, 110, 111
- Voeller, J. 82, 88
- volume 79–80, 129, 139, 164–8
- meaning of volume and price indices 142–5
  - quality and 117, 118–19
  - real value and 95–7; value of money 145–8
  - SNA integration of price and volume indices 70–3
  - see also* index number problem
- wage rate 159–62
- Walras, L. 127
- wants 40–1, 46–9
- work
- and leisure 44–5
  - paid 41–3, 44–5, 53
- world prices 74–80
- Zaire 62–3