Abstract: Pareto’s scholarly contribution to the study of the economic phenomenon evolved substantially with each of his major publications: *Cours d’Économie Politique* (1896-97); *Les Systèmes Socialistes* (1901-02); *Manuale di Economia Politica* (1906) / *Manuel d’Économie Politique* (1909); and the (1916), *Trattato di Sociologia Generale* (1916). At the broadest level, there are three distinct phases in the evolution of his economic thought. The initial phase, between 1890 and 1899, is characterised by an attempt to frame Walrasian theory within a positive but pluralistic setting while also making original contributions to welfare economics and applied economics. The ‘intermediate phase’, between 1900 and 1911, is characterised by Pareto’s original development in pure theory of equilibrium that has placed him among the first rank of economic theorists of the day. In the final phase, which ran from 1912 until his death in 1923, Pareto developed a sociological approach to the economic phenomenon, which, among other things, extended his study of collective economic welfare to collective social welfare, which covered issues that subsequent theorists would consider when developing the ‘Social Welfare’ function. The presentation reports on the three phases in Pareto’s economic thought, from McLure (*forthcoming*), and considers the significance of his *Manual of Political Economy* (2014) to that body of work.
Introduction

As an engineer, and later manager, Pareto’s deep interest in economic matters was evident from the 1870s through his participation in the activities of the Accademia dei Georgofoli and the Società Adamo Smith. But in terms of Pareto’s development as a contributor to economic thought, emphasis is traditionally given to 1890, as the year in which Pareto met both Maffeo Pantaleoni and Léon Walras, and 1891, as the year when, at Pantaleoni’s suggestion, Pareto re-read Walras’s Éléments d’Économie Politique Pure (1874 [1954]). The rational for this interpretation derives from an association of events because, almost immediately, Pareto assimilated and critically discussed aspects of marginalist economic thinking in the public domain and, in a rapid and prolific way, contributed to the development of that literature.

In the recent critical and variorum edition of Pareto’s Manual of Political Economy (1906, 1909 [2014, pp.520-522]), however, Alberto Zanni expressed dissatisfaction with that ‘traditional’ characterisation. His objection is based on Pareto’s letters to Francesco Papafava, written in 1888, before he had read Walras’s Elements, in which Pareto expresses his resolve to write a “treatise on rational political economy. In other words, I would like to explain the general principles of economic science in their most general features, similar to what is done in mechanics in those treatises that are precisely called treatises on rational mechanics” (1906, 1909, [2014, p. 520]). Given the extensive role of the mechanical analogy in Pareto body of published work, and the use of that analogy in the framing and development of marginal economics, Zanni’s dissatisfaction with the traditional interpretation is clearly well grounded.

Nevertheless, Pareto’s early contributions to scientific economics make no secret of his interest in Walras’s economics. Notably, his articles published in the Giornale degli Economisti between 1892 and 1894 cite Walras no less than 67 times. Pareto’s 1888 declaration of a desire to write a treatise on rational political economy is important not because it diminishes the influence of Walras on Pareto, but because it explains why he was well and truly ready to absorb Walras’s work quickly and develop that work in a significant way a few short years after 1890. But, as is well known, Pareto and Walras soon fell out over matters related to the character of economic science and the influence of Walras on Pareto’s work diminished over time.

The point here is that Pareto’s work, perhaps more than that of other great scholars, continued to develop and evolve over the period of his scholarly activities. In view of this, historians of economic thought need to take account of the evolution of his work if the relationship between the diverse parts of his scholarship is to be appreciated. The purpose of this paper is to discuss the evolution of three major themes on Pareto’s work – methodology, equilibrium and welfare – with reference to the different stages in the development of his body of work. The study draws extensively from McLure (forthcoming), particularly regarding the stages of Pareto’s work, but it also extends beyond that work in significant way. For example, to mark the recent publication of the
variorum and critical edition of Pareto’s *Manual of Political Economy* (1906, 1909 [2014]), some consideration is given to the relationship between that work and Pareto’s previous and subsequent work on the economic phenomenon. Brief consideration is also the significance of the *Manual* to scholars in Italy and the economics profession in the English speaking world more broadly.

The paper is structured in five sections. Section 1 defines the three main stages in the development of Pareto’s approach to the economic phenomenon and lists his major works from each of these stages that deal with questions of methodology, equilibrium and welfare.¹ The next three sections deal with the evolution of Pareto’s ideas on methodology (section 2), equilibrium (section 3) and welfare (sections 4) across the three stages of his scholarship. The paper concludes (section 5) with some reflections on significance of the *Manual*.

### 1. Stages in the Development of Pareto’s Thinking about the Economic Phenomenon

Three stages in the development of Pareto’s thinking on the economic phenomenon are considered in this paper: the *Initial Stage* (1892-1899), when his main contribution to theoretical economics was his positive reformulation of Walrasian economics;² the *Intermediate Stage* (1900-1911), when his original and legacy defining contribution to pure economics theory was developed; and the *Final Stage* (1912-1923), when he developed his theoretical sociology and developed a provisional ‘sociology’ of the economic phenomenon to account for ideas and actions by individuals that have direct regard for the material well-being of other members of the community. Pareto’s major works that deal with methodology, equilibrium and welfare, from each of the three stages in the development of Pareto’s body of thought, are noted below.³

The major articles from the *Initial Stage* that deal with the themes of this paper include the five part article *Considerations on the Fundamental Principles of Pure Political Economy* (1892-93 [2007]) and ‘The Maximum of Utility given by Free Competition’ (1894b [2008]). But the unequivocal high point during this stage of Pareto’s intellectual development is the publication of his major book on economics, the two-volume *Cours d’Économie Politique* (1896-97). The most significant articles from the *Intermediate Stage* are ‘Un’applicazione di teoria sociologiche’ (1900), the ‘Summary of Some Chapters of a New Treatise on Pure Economics by Professor Pareto’ (1900 [2008]), ‘On a New Error in the Interpretation of the Theories of Mathematical Economics’ (1902 [2008]), ‘The

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¹ Of course, the scope of Pareto’s contribution extended well beyond methodology, equilibrium and welfare. Applied economics is not addressed in this paper.

² The initial period is also the period in which Pareto made prominent contributions to applied economics such as his famous work on income distribution, but, as noted in footnote 1, those contributions fall outside the scope of this paper. See McLure (*forthcoming*) for a discussion of Pareto’s applied economics.

³ When no English language translation of a major work is available, the original foreign language title is cited. Otherwise, the English language title is cited.
Application of Mathematics to Political Economy’ (1902 [2009]) and ‘Mathematical Economics’ (1911). The books from this period are the two-volume *Les Systèmes Socialistes* (1901-02) as well as Pareto’s *magnum opus* on economics, the single-volume *Manual of Political Economy* (1906, 1909 [2014]). The most significant articles from the *Final Stage* are ‘The Community’s Utility Maximum in Sociology’ (1913 [1999]) and ‘Experimental Economics’ (2008) and the great book from this period is the multi-volume *Treatise on General Sociology* (1916 [1935]).

2. Methodology

In his presentation of 29 April 1877 to the Accademia dei Georgofili “On the Logic of the New Economic Schools” (Pareto 1980), Pareto presented Comte as the precursor to the German School and, indeed, he professed great admiration for Comte. Nevertheless, Pareto goes on to make it clear that he “is not convinced by his [Comte’s] reasons for attacking economic science” (1877 [1980, p 26]). After noting that neither Comte nor Mill regarded *Laissez-faire laissez-conduire* as being absolutely true, Pareto’s comment on the scientific implications of this ideal are Millian in the sense that he acknowledges the multi-field and deductive character of social science: “instead of being taken as an *a priori* basis of political economy, this proposition [*laissez-faire laissez-conduire*] should be considered as a result, not only of this, but also of all the other social science” (Pareto 1877 [1980, p 28]). Over time, as Zanni (Pareto 1906, 1909 [2014, p. 512]) has recently reminded us, Pareto was to become ‘quite fond’ of Mill’s phrase the ‘concrete deductive’ method and Pareto’s thinking on methodology prior to becoming an academic was carried through to the initial stage once his academic career had commenced.

2.1 The Initial Stage: 1892-1899

During the initial stage, Pareto’s main work to address ‘methodology’ was his *Cours*, with the explicit discussion of the subject reinforced by implicit methodological framing of theoretical issues. The preface to this book boldly stated that economic theory is accepted or rejected solely in terms of its ability to explain known facts or anticipate new facts and there is no concern raised over ontological complications confronted by positive science. However, the text to the book qualifies and contextualises that bold position by quickly framing discussion of the social sciences in a rather Millian way. He notes that the method of the social science derives from the physical sciences, with different types of social phenomena isolated via abstraction, with theory pertaining to the abstraction developed by the concrete deductive method. Laws are presented as general and universal regularities, theory is presented as dealing with subclasses

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4 The translation of the title of Pareto’s sociology, *Trattato di Sociologia Generale*, was only retained as a subtitle for the English translation. A new title, ‘*Mind and Society*’, was introduced by the editors / translators.
of social phenomena in a general way that does not take into consideration all of the aspects of the particular concrete phenomenon. Necessarily, the nexus between theory and observed fact becomes more tenuous than what is implied by the preface to the book.

The ‘wrinkle’ that Pareto added, which he also took from the physical sciences, is the idea of ‘successive approximation’ and the flesh that he added to it was through his distinction between utility, or that which is useful to the individual (the collective or species) and ophelimity, or the abstract quality of things that appear as a desire or need, irrespective of any judgement about the legitimacy of that desire or need (Pareto 1896/97 [1971, p.1086]). Different classes of utility, and ophelimity, are considered by Pareto so that branches of knowledge within the social sciences could be developed. Specifically, Pareto explicitly differentiates economic utility from ethical utility and religious utility; just as he differentiates between economic ophelimity, ethical ophelimity and religious ophelimity.

The study of the ‘utility’, to individuals (collectives or species), from actions associated with material desires and needs goes beyond the scope of deductive economic theory; but the study of ‘ophelimity’ from actions associated with material desires and needs falls within the scope of deductive economic theory. But because of the extent of abstraction adopted in pure theory, applied economics is needed to complement deductive theory and bring economic science, as a synthetic combination of the two, closer approximation to the concrete phenomenon. But successive approximations means that all this is not limited to one branch of social sciences. Other disciplines need to be considered, with Pareto’s scheme allowing for deductive ethical and religious theory routed in the concepts of ethical ophelimity and religious ophelimity respectively, although he makes no attempt to develop such sciences in the Cours.

Having accepted the possibility of deduction in multiple disciplines, Pareto also makes it clear that those deductions must have strong positive grounding. To operationalise this idea, Pareto opts to focus this pure theory on the existence of interdependence – correlation – and largely leave aside discussion on the causal sequence of events to applied studies. To establish the character of such interdependence, Pareto had a clear relationship in mind between pure theory and the determination of averages in the concrete world. In regard to political economy, Pareto wrote to Maffeo Pantaleoni in 1892 that “economic science is a science of averages. If the final degrees [of utility] escape the use of averages, they cannot find a place in the science” (Pareto, cited in Pareto 2014, p. 549).

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5 Curiously, this preface – and the associated outline of the single positive criterion by which theory should be accepted or rejected – is excluded from the 1971 edition of the Cours.

6 In 1892 Pareto had not yet introduced the term ophelimity. Instead, he used the term utility and, when referring to marginal utility, he adopted Jevon’s phrase “the final degree of utility”.

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2.2 The Intermediate Stage: 1900-1911

In regard to methodology, the intermediate stage emerges as a period of transition. That transition starts in Pareto’s article “Un’Applicazione di Teorie Sociologiche” (1900 [1980]), in which he suggests there are three aspects of social phenomena that need to be isolated and studied: the objective phenomenon, the subjective phenomenon, and the interaction between the two whereby the objective phenomenon acts to alter the subjective phenomenon, and vice versa.

For example, the rise and fall of political elites is a real phenomenon, sentiment among the members of a society in support for, or in opposition to, the prevailing political elite is a subjective phenomenon; and these two phenomena are interdependent: the rise (or fall) of a political elite may influence, and be influenced by, the distribution of sentiment across the constituency in favour of, or in opposition to, the ideas and actions by the prevailing elite.

This theme was taken up again and with greater clarity and force in Les Systèmes Socialistes (Pareto 1901-1902 [1974]). This book is also important as it records Pareto’s enhanced growing appreciation of the difficulties associated with ontology in the social sciences. In particular, he recognised that the objective phenomenon is not, and cannot be, strictly objective as human beings do not have the facility to observe social phenomena in a strictly objective way:

“Our ignorance of facts, our passions, our prejudices, the ideas in vogue in the society in which we live ... veil the truth and impede an exact impression of the objective phenomenon ... We are in the situation of a man who views objects in a curved mirror; part of their proportions are altered.” (1901-02 [1974, pp 137-138).

He does not, however, consider this a reason to abandon the general relationship between theory and observation. Rather, it is a reason to urge caution and care in the application of positive principles to the social sciences.

At both the methodological and theoretical level, the significant feature of Pareto’s recognition of the imperfect understanding of the objective phenomenon and the subjective phenomenon, and especially the interaction between the two, is the emergence of Pareto’s distinction between non-logical and logical action. Pareto regarded Sociology as the study of social phenomena where action is non-logical because the related subjective and objective phenomena have interacted and alter each other. In such a situation, the logical nexus between means and ends breaks down because subjective intent alters with changes in the objective state. Of course, such non-logical action is not illogical; rather it just recognises that feelings or sentiment are an important and variable influence on human action. In contrast, in Pareto’s system action is logical when the subjective and objective phenomena, although related, do not alter each other when they interact, thereby preserving the possibility of a logical nexus between means and ends.

As a result, the main implication of Pareto’s distinction between logical and non-logical action is that the scope for use of the deductive method in relation to non-logical action is very much diminished. In the transition stage, Pareto had
grasped the problem, but he resisted the idea of abandoning the possibility of using deductive theory to consider non-logical action. As noted earlier, in the Cours there is discussion along the lines that economic, ethical and religious theories of human behaviour could be developed from the distinction between economic, ethical and religious classes of ophelimity. In the Manual, the difficulties of applying deductive theorising to non-logical actions are evident throughout the first two chapters, but Pareto still points out that homo oeconomics, homo ethicus and homo religiosus (Pareto 1906, 1909 [2014, p. 9]) could become the subjects considered in economic, ethical and religious theories. This clearly implies that he had not ruled out the possibility of deductive theories based on postulates pertaining to the logical actions of homo ethicus and homo religiosus.

2.3 The Final Stage: 1912-1923

In the final stage of his career, however, the possibility of deductive theory of ethics and religion are largely abandoned. The distinction between logical and non-logical action drives all considerations, including matters that fall within the methodological sphere. The dichotomy is only ‘approximate’ because, by this point, Pareto’s concern with ontological matters has grown to the extent that he conceives there is no such thing as an absolutely objective phenomenon. Everything is viewed with different degrees of subjectivity. However, he did not cease using the term ‘objective’, and continued to make the subjective/objective distinction, because abandoning the work objective would, in his view, result in the introduction of “prolix, tedious, ridiculous” jargon and “lengthy verbosities” that are “as useless as they would be pedantic “(Pareto [1916] 1935 p.57). To avoid that, Pareto satisfies himself with the explicit statement that concepts associated with this social science cannot be interpreted in an absolute way.

“the absolute has no place in logico-experimental science, and we must always take in a relative sense propositions that in the dress of ordinary parlance seem absolute.” (Pareto [1916] 1935 p. 57).

Consequently, Pareto’s divide between logical and non-logical action is to be interpreted as an approximation based on the revelation of varying degrees of non-logic. When non-logical elements is modest, deductive theory predicated on logical action may provide a useful approximation of the concrete phenomenon if that is verified by observation. But when action is predominantly non-logical, theory deduced from a behavioural postulate will merely rationalize a proposition. Such deductive theory will provide the veneer of logic for the doctrinal proposition being advanced, but it will have little or no relationship to the concrete phenomenon.

How then can non-logical action be studied using Pareto’s logico-experimental approach? Pareto’s solution was to adopt the following sequence: induction-deduction-induction. The initial induction is obtained from the study of social
and economic theories and doctrines to identify regularities associated with sentiment and the interaction between the subjective and the objective form in the written word. How do writers persuade others? Those regularities then provide the basis for deduction about human action when the subjective and objective phenomena interact. The third step in the sequence is to subject those deductions to another form of induction to verify that the result being presented represents a reasonable approximation to the concrete phenomenon. But at this stage, the inductive process to verify theory is no longer statistics, because statistics pertaining to non-logical action are largely uncertain.

“When the calculus of probabilities first began to be studied, there was hope that it might yield exact formulae for finding probabilities of causes. The hope proved groundless because we have no means of establishing any likeness between practical cases and drawings of one or more balls from an urn. We have no knowledge whatever as to the number of balls in the urn, and little or none as to the a priori probabilities of the various combinations. ... We are reduced to evaluating probabilities approximately in other ways.” (Pareto 1916 [1935] §554).

The form of induction that Pareto had in mind for the verification of theories pertaining to non-logical action is nothing other than ‘history’.

Perhaps to underline the transformation in his thinking on methodology, Pareto returns to J. S. Mill, who proved to be influential on Pareto’s early scholarly works, to underline the importance of the non-logical on human action. In a strictly logical sequence, the mature Pareto observes that Mill thought that ‘belief in God’ must produce the sentiments of ‘fear for’ and ‘reverence of’ God. But Pareto contends that there is, in fact, a two way relationship of interdependence that must be recognised: with fear and reverence also acting to sustain the belief in God.

“To a perfect logician like Mill it seems absurd that anyone could experience fear unless the feeling be logically inferred from a subject capable of inspiring fear. ... In other connexions, Mill is perfectly well aware of the social importance of non-logical actions. But he at once withdraws the concession, in part at least, and instead of going on with what is, turns to speculations as to what ought to be.” (Pareto 1916 [1935] §296)

The end result is that in the course of his scholarship, Pareto moved from an almost Millian multidisciplinary methodology of the social sciences that utilised the concrete deductive method; to adopt a ‘the logico-experimental’ approach

7 To Pareto, the main significance of the history of economic thought was that it is the primary data from which to derive a sociological theory of the economic phenomenon. This is achieved by systematic studying of the interaction between sentiment expressed in economic doctrines and the interaction between such sentiments and action in the concrete world. (See McLure 2006).
8 Pareto’s reference to ‘what out to be’ is directed at Mill’s views on good ‘justice’, in particular, and utilitarian ideas more generally on the greatest good.
built upon a fundamental dualism that differentiated between logical and non-
logical action. One half of that dual (the study of logical action) retains a
fundamentally Millian orientation based on the concrete deductive method; and
the other half of the dual (the study of non-logic) steps away from the concrete
deductive method in favour of a three step process of induction (study of the text
of social doctrines), deduction (the regularities derived from the study of text) and
induction (supporting evidence provided from history). In regard to equilibrium,
a critical difference between each side of the dual is the great difference in the
degree of determinism, as discussed in the section 3.

3. Equilibrium Theory

3.1 The Initial Stage: 1892-1899

Pareto’s first serious theoretical contributions to the Giornale degli Economisti
commenced in 1892 and over the next few years he wrote a stream of serious
articles in that journal that revealed his appreciation of the Walrasian formulation
of economic equilibrium. However, this endorsement was not made
unconditionally, so, when he succeeded Walras to the Chair in political economy
at the University of Lausanne, Pareto did not adopt Walras’s Elements as the
textbook for his classes. Part of the reason concerns Pareto’s desire to de-
emphasise the role that Walras’s notion of tâtonnement plays in the equilibration
process. The origin of this concern is evident as early as 1892, in the first part of
the five part article ‘Considerations on the fundamental principles of pure
political economy’ (1892-93 [2007]), when he drew attention to Walras’s
paraphrasing of an interlocutor who had questioned the necessity of
demonstrating how prices adjust in the face of excess demand and excess supply,
and took the side of the interlocutor:

“[Walras’s] interlocutor … should have said that it is from direct
observation that we deduce the law about prices rising when demand is
greater than supply, and vice versa. And he should also add: since these
are elementary, simple direct observations, if you no longer wish to take
them as the basis of your reasoning, but as its consequences, then you
must show that the replacements are more elementary, simpler and more
direct.” (Pareto 1892 [2007, p. 4])

Pareto’s support for treating the equilibration process within pure theory was
ambivalent at best.9 His position on the issue was most likely due to his
realisation that a formal theory on the process of adjustments to equilibrium
would require dynamic economic equations which went beyond the scope of
current knowledge. As a consequence, Pareto confined pure economic theory to
the study of (static) economic equilibrium and its mathematical properties, which

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9 In the Cours, Pareto discusses the equilibrating role of haggling, but he used the French word
marchandage and not Walras’s term tâtonnement (Lendjel 1999). Pareto’s contribution to
consumer theory and his influence Slutsky is not discussed in this paper (see Dooley 2008) and
he considered adequate to suggest the existence of equilibrium. The path by which real economies adjusted to equilibrium was a subject in applied economics.

“I recognise that I have taken the idea of equilibrium from Walras, to which I have added the idea of successive approximations” (Pareto 1960, p. 36).

The introduction of elementary (marginal) ophelimity, based on the sub-category of economic ophelimity, to pure economic theory was intended as a replacement for Walras’s notion of rareté. This was one of the devices that Pareto used to incorporate general equilibrium within a successive approximations framing. His development of a theory of rent, and the placement of that theory outside the scope of pure economic theory (i.e. it was applied economic theory) also served to highlight the distinction between the pure theory of economic equilibrium and the concrete phenomenon in Pareto’s thinking. 10

But even within the pure theory of equilibrium itself, Pareto did not adopt all Walras formalisation. As Mauro Boianovsky (2013, p. 107) has recently highlighted, the *Cours* does not aggregate individuals’ equations to derive the supply and demand for particular good. Pareto’s system retains a disaggregated system that is not broken down into a discussion of excess supply and excess demand for particular commodities. Pareto also deviated from Walras in other more ambitious and substantive ways. Most importantly, the *Cours* also extended the scope of general equilibrium from free competition, as in Walras’s case, to include monopoly.11

It must also be recognised that Pareto’s ‘applied’ economics in the *Cours* was developed under the influence of Herbert Spencer and the French edition of his

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10 In addition to the Malthusian-Ricardian idea of rents on fixed natural resources, Pareto recognised that rents on produced economic goods may result from changes in profit when the producer moves, as a result of changed technology or costs, from an initial point of equilibrium to a new ‘incomplete’ equilibrium under free competition. The new equilibrium state is incomplete because savings are not uniformly transformed into different capital in the proportion required by relative prices under the new equilibrium or because of production or other obstacles to competitive price adjustments. The resulting ‘rent acquired’ by the owner of a particular heterogeneous capital good may be positive or negative and is equal to the difference between the realised return on that particular good and the general rate of return on savings. For an incisive discussion of Pareto’s approach to rent, see Bird and Tarascio (1992 [1999]).

11 By way of digression, perhaps some other contributions of Pareto should also be briefly noted. Other issues of significance that Pareto addressed during this initial stage include his contributions to demand in the ‘Considerations’ (which demonstrates the negative slope of the demand curve by employing comparative statics and hessian determinants to derive a downward sloping demand curve while allowing the final degree of utility of money to vary); the introduction of variable coefficients of production into general equilibrium theory of production (Pareto 1894 [2008]) and, yet, in the *Cours*, Pareto largely rejecting the marginal theory of production and distribution whereas Walras is quick to embrace it. The relative merits of Pareto’s views on marginal productivity were forcefully debated by Henry Schultz (1929, 1932) and John Hicks (1932a, 1932b), But Pareto managed to persuade others of the limits of marginal production theory and influenced Enrico Barone and Philip Wicksteed in their decisions to abandon that theory (Schultz 1929, Dorfman 1964).
In the chapter of the *Cours* dedicated to the ‘economic organism’, Pareto comments favourably on Spencer’s appreciation of the mutual dependence between social phenomena and, from this, Pareto discusses the idea of movement in both the ‘economic equilibrium’ and ‘social equilibrium’. The discussion of economic equilibrium starts by revealing Pareto’s ambition to extend the mechanical analogy to encompass the concept of inertia. He did so by reflecting, in the *Cours* (1896-97, §586 [1971, pp.642-643]), on the possibility of developing a system of dynamic equations in which the gain an individual experiences from any (voluntary) infinitesimal variation in commodity space through time is equal to an opposing infinitesimal force, the force of habit, that is analogous to the concept of inertia in mechanics.

However, Pareto stressed that, unlike the equation for inertia in rational mechanics, the form of the equation is not known and neither are the values. In view of this, he abandons this line of research in all subsequent publications, although, in the remainder of the *Cours*, he extends that line of thinking to investigate issues related by economic cycles.

### 3.2 The Intermediate Stage: 1900-1911

The intermediate stage is Pareto’s most celebrated period for work for its influence on economic thinking in the English speaking world. It is clearly the period in which Pareto’s original contribution to economic theory was the greatest. In particular, the Walrasian core of Pareto’s equilibrium theory became even less apparent when Pareto presented consistency of choice in unchanged circumstances as a prerequisite for logical action. The resulting development of Paretian choice theory relied on preference ordering which was alien to, but not inconsistent with, Walras system.

The idea for an ordinal referenced theory of choice is first raised by Pareto in his paper “Comment se pose le problème de l’économie pure” (1898), but its theoretical formulation by Pareto is first presented in his two part article, ‘Summary of Some Chapters of a New Treatise on Pure Economics” (1900). It provides for each indifference curve in the system of indifference curves to be labelled by a monotonically increasing index number and demonstrates that the shape of the indifference curves is unaltered when an arbitrary transformation function is used to change the index numbers. As a result, ordinal preferences or cardinal utilities may be used to determine the same equilibrium state.

Pareto’s goal in introducing ordered preferences to economics was to make the subject a more experimental science that focused on the ‘fact of choice’ and dispensed with considerations on the motives for choice. Such facts may, in Pareto’s view, be obtained through either binary choice experiments (when investigating potential movement in choice space) or interpolation (to estimate the

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12 In a letter to Pantaleoni written on 8 January 1898, Pareto calls Spencer the “only writer who has produced a truly scientific work on sociology” (Pareto 1906, 1909 [2014, p423]).
13 The discussion in this part of the book discusses questions related to movement in welfare through time (see Part 4).
equation for indifference curves in the area that is close to equilibrium). Either way, indexing indifference curves based on the fact of choice does not depend on the proposition that maximising behaviour requires measurability of ophelimity.\textsuperscript{14}

But Pareto’s commitment to choice theory was non-dogmatic. Be it when the idea is first introduced in the “Summary”, or when Pareto’s writes on the matter again in his entry ‘The Application of Mathematics to Political Economy’ (1902) in a German language encyclopaedia or the Italian edition of the \textit{Manual}, he consistently mentions the equivalence of the two systems. The often made suggestion that Pareto was confused is most strongly associated with the French edition of the Manual, where he formally dealt with integrability (ophelimity and non-closed cycles) and indexes of ophelimity in tandem; and he slips into poor expository practice of not defining variables. The early literature on ordinalism by Hicks and Allen and Lange all referred to the French language \textit{Manuel}, with some noting that systems of ophelimity were sometimes set up ordinarily but with cardinal restrictions also imposed. However, in the earlier Italian \textit{Manuale}, Pareto took much greater care to clarify exactly when index numbers (I) are considered: one, as a function (\( \Phi \)) of consumer goods on the basis that ophelimity is a quantity (cardinal function); or two, as a function (\( \Psi \)) of consumer goods when indifference curves are determined from direct observation. One of the reasons for this non-dogmatic view is discussed in section 4 (Welfare Theory).

Another feature of the \textit{Manual} is the specification of economic equilibrium as a general theory of transformations. Specifically, Walras’s economic theories of exchange, production and capital formation are absorbed within a more general formulation where equilibrium is considered as the balance between an individual’s ‘tastes’, defined by individual’s choices, and ‘obstacles’ represented by the costs of transforming goods in response to tastes, either through the exchange or the production process. One consequence of this increasingly abstract focus on ‘obstacles’, as distinct from the more concrete categories of production and capital formation, is that Pareto’s formal analysis of supply side issues does not refer to ‘isoquant’ and ‘isocost’ lines. Rather, he makes extensive use of what could be called ‘iso-profit’ lines (but which Pareto called ‘indifference lines of obstacles in objective transformation’ (1906, 1909 [2014, p.88])). But in taking this path, Pareto moves further away from Walras by extending that system to provide for the possibility of ‘equilibrium without prices’ by which he means extending general equilibrium from the case of ‘constant’ prices (the standard parametric role that prices play in Walras’s equilibrium state) to a case of variable prices for each successive quantity of product when examining the ‘obstacles’ to satisfying ‘tastes’.\textsuperscript{15}

Pareto considers his equilibrium between tastes and obstacles for three types of phenomena. Type I phenomena characterizes the case where individuals act

\textsuperscript{14} Marco Dardi(2006) reviews Pareto’s pioneering approach to choice theory and contrasts that with subsequent developments in the field.

\textsuperscript{15} As Antonio Gay (2006, p. 536) has shown, the Walrasian and Paretian framing yield equivalent results when equilibrium is in a steady state, but outside the steady state the Paretian framing can be readily used to make it explicit that efficiency is not independent of the initial distribution (although that result is only achieved at the expense of a reduction in the realism of the theory).
economically to realise a direct benefit within market conditions determined by voluntary pursuit of direct tastes without strategic interaction. Type II phenomena characterizes the case where individuals act to increase the indirect benefits from their actions through strategic behaviour that modifies the market price. Kirman (1987, 806) has highlighted the originality of Pareto’s analysis of the Type II phenomenon because it explicitly recognised actions to influence prices and examined equilibrium in the context of what is now termed monopolistic competition, well before monopolistic competition was integrated within general equilibrium frameworks in the 1960s. Type III phenomena characterizes the case where collectivist action is intended to maximise a given notion of welfare (e.g. a socialist state).

3.3. The Final Stage: 1912-1923

Pareto’s conception of equilibrium for the economic phenomenon was developed in its most expansive form in the final volume of his Sociologia and in his article ‘Experimental Economics’ (1918). The first point to emphasise here is that economic equilibrium is but one aspect of a broader social equilibrium that pertains to the social state. The social state is considered with respect to: the distribution of conformist and non-conformist behaviour by individual members of a society; the political balance between individualist and collectivist social organisation; and the general economic equilibrium between the activities of high-risk-taking speculators and risk-averse rentiers. The key question that Pareto seeks to answer objectively is whether the social equilibrium is stable, in which case the prevailing pattern of social, political and economic action continues, or is unstable, in which case forces of change are overcoming the forces of conservation. For example, economic elites may initiate change when relative proportions of speculators and rentiers starts to change, which may be associated with a change in the political balance as pressures emerge to alter the proportions of individuals among governing elites who are pro-individualist (decentralising) and pro-collectivist (centralising).

Pareto argued that quasi-logical rationalisations are used to justify social theories and policy relevant ideas in reference to some residual sentiment. He called this observed residual sentiment ‘residues’ and referred to the form of language in which residues are expressed and rationalised as ‘derivations’, because they derive from sentiment and constitute the form in which ideology is rationalised. He again rejected the possibility of theories based on the concrete deductive approach being developed in this circumstance because of the interdependence between objective and subjective phenomena: “in activity based on residues human beings use derivations more frequently than strict logical reasonings… Residues are not, like tastes, merely sources of conduct; they function throughout the whole course of the conduct developing from the source, a fact which becomes apparent in the substitution of derivations for logical reasonings.” (Pareto [1916] 1935, 1442-43)

As a first approximation, Pareto considered the theory of social equilibrium with reference to the two main classes of residues: class I, instinct for combinations;
and class II, *persistence of aggregates*. The instinct for combinations is the subjective force for change and is associated with a faith in the effectiveness of reordering social concepts and social arrangements. Persistence of aggregates is the subjective force for preserving the prevailing social relations, such as relations within the family, and between places and social groups. Derivations linked to class I residues may advocate reformist ideologies (irrespective of the character of change being advocated) while derivations linked to class II residues may advocate conservative ideologies (irrespective of the social arrangement being preserved). From this he then developed his ‘fundamental sociological theorem’, namely, the view that a general and rough explanation of social change is evident from the relative proportions of class I and class II residues among the ruling class and among the subject classes (Pareto 1916 [1935], 1921). In relation to the economic phenomenon, the main consequence of non-logical action evident from this fundamental theorem and the economic balance between *speculators* and *rentiers* related to long run economic growth and development:

In our day, for instance, the enormous development of economic production, the spread of civilisation to new countries, the remarkable rise in the standard of living among all civilized peoples, are in large part the work of speculators. But they have been able to do that work because they came from populations in which class II residues were numerous and strong. (Pareto [1916] 1935, 1578)

Pareto’s final contribution to the *Giornale degli Economisti*, ‘Experimental Economics’ (Pareto 1918 [2007]) attempted to make evident the economic implications of his sociological theory of social equilibrium. He did so by differentiating between the ‘economic part’ of the economic phenomenon, which is limited to local action when subjective tastes can be given exogenously, and the ‘sociological part’ of the economic phenomenon, which extends to non-logical action and influenced by endogenous and derivations.

“Very often the sociological part prevails over the economic part; examples of this are: the problem of free trade, or tariff protection; many monetary problems; almost all taxation problems; and other similar problems.” (Pareto 1918 [2008], 558)

When the economic phenomenon is significantly influenced by public policy, the interplay between residues and derivations are an endogenous influence on individuals’ views on the behaviour and welfare, then the mature Paretian position was that economic policy should considered from both the economic and sociological perspectives. Consequently, economic theories of trade, money and public finance need to be complemented by the sociology of trade and protection, the sociology of money and fiscal sociology.
4. Welfare Theory

4.1 The Initial Stage: 1892-1899

Pareto’s ‘Il Massimo di Utilità dato dalla Libera Concorenza’ (Pareto 1894b [1982]) was Pareto’s first major exploration into the field of welfare economics. Its significance to the history of economic thought is great as it is here that variable coefficients of production are first introduced to general equilibrium economics, and, secondly, it demonstrated that a point of equilibrium under free competition must yield an economic maximum when the cost of productive services is minimised by the competitive process. He does this by showing that when society moves from an initial state that is not a point of free equilibrium to a subsequent one that is a cost minimising state of free equilibrium, an economic residual (surplus measured in terms of the numéraire good) is generated from the more efficient use of productive services.

Importantly, Pareto introduces the criterion in this article that social welfare is increased when the coefficients of production are altered in a manner that increases the product returned to each individual member of society but harms no one. Indeed, this is the first article by Pareto to stipulate what is now known as the Pareto criterion for welfare gain (no individual is harmed and at least one gains) and the first theorem in welfare economics (an economic maximum, in terms of the Pareto criterion, is given by a point of equilibrium under free competition). In addition, the ‘compensation principle’ is, as Chipman (1976 [1999, 178]) has reported, introduced in this article because to saw a change in production coefficients that causes harm to someone as efficient if enough additional product is created to provide the potential for those who lose to be compensated by those who gain.

Pareto also goes on to discuss variations in the coefficients of production in socialist economies, when the second law of welfare economics (any point of economic maximum can be realized under conditions of free exchange) is also broached — but imperfectly. Here he takes it as read that economics has nothing to say on what redistributive goals should be pursued by society, he allocates that task to the minister for justice, but he insists that, once redistributive goals are established, the welfare theorems of economics show how those goals can be achieved efficiently i.e. by not altering the coefficients of production (e.g. increasing wages paid for labour services) and making lump sum grants.

This analysis of welfare generally, and welfare in socialist countries in particular, is further developed in the Cours (1896-97 [1987], 722-34). However, the imperfections of the article are also preserved in the Cours, with analysis focusing on production (albeit with variable coefficients of production) while largely setting aside the issue of exchange, which is necessary for a general specification of the fundamental theorems of welfare economics.

However, the Cours does venture into one important area of welfare that was not considered in his earlier article on welfare. Specifically, Pareto used his
discussion of dynamics in the ‘economic organisms’ section of the book as the basis for a discussion of the question of welfare over time as the real economy oscillates around possible welfare trajectories, as shown in the figure below (Pareto 1896-97 [1971, p: 674]).

The curve abcd represents movement in the concrete sense (and appears to represent the quantity of economics goods expressed in numeraire good equivalents)\(^\text{16}\), whereas line \(a\beta\) and \(a'\beta'\) and \(a\beta''\) represent the respective trajectories of: the utility maximum for the species or collective (\(a\beta\)); the utility maximum for the individual (\(a'\beta'\)); and the ophelimity maximum for the individual. From a welfare point of view, there are at least two striking points. First, that when dealing with questions related to utility (not ophelimity) maximisation of the collective, or species, Pareto sets the problem of interpersonal comparisons of utility aside. Second, as the slope of the three welfare trajectories is the same, Pareto is implicitly assuming that the broad welfare (material, religious, ethical utility) of an individual and the broad welfare of the collective move in the same direction as the material welfare (material ophelimity) of each individual. One the face of it, this appears to fly in the face of Pareto’s own explanations for differentiating between ophelimity and utility in the first place.

4.2 The Intermediate Stage: 1900-1911

The intermediate phase is dominated by Pareto’s response to Gaetano Scorza (1902), who claimed that Pareto’s position on what we now call the first law of welfare economics is nothing but ‘gross sophistry’. In ‘On a new Error in the Interpretation of the Theories of Mathematical Economics’ (Pareto 1902), Pareto was full of sarcasm and scorn for Scorza. But he also prepared a substantive response that extended his previous analysis of welfare to include exchange as well as production. In the process, he provided economics with its first

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\(^{16}\) There should, of course, be a single concrete ‘quantity’ that corresponds to any point in time, but the curve that Pareto presents in this diagram two possible quantities within the \(ab\) range of the curve.
analytically sound, first-order demonstration of the first fundamental theorem of welfare economics.\textsuperscript{17}

After the polemic, Pareto again returned to the issue of economic maximisation through his analysis of Types I and II phenomena in the \textit{Manual}. The Type I phenomenon yields an economic maximum for perfect competition because no movement from that point satisfies the criterion that at least one person gains and no one is harmed.

In contrast, the Type II phenomenon does not yield an economic maximum. The investigation of the Type III phenomenon in the \textit{Manual} contains aspects of the second fundamental welfare theorem but the conclusion is largely unchanged from the earlier \textit{Cours}: a socially planned distribution of income can achieve an economic maximum when production is efficiently coordinated by the ‘ministry of production’. However, Pareto now explicitly stresses that pure economics alone does not give us a truly decisive criterion for choosing between an organisation of society based on private property and a socialist organisation.

Finally, it should be noted that an important regularity becomes evident from a close reading of ‘Summary of Some Chapters of a New Treatise on Pure Economics’ (1900), ‘On a new Error in the Interpretation of the Theories of Mathematical Economics’ (1902), written two years after his introduction of ordinal choice theory, and the \textit{Manual} (1906). Specifically, notwithstanding Pareto’s introduction of ordinal ophelimity to his analysis of equilibrium, whenever he undertook analysis of questions of economic welfare that required deviation from the equilibrium point, he consistently retained the use of a cardinal approach to ophelimity.\textsuperscript{18}

4.3. The Final Stage: 1912-1923

By 1912 Pareto’s scientific thought had shifted almost entirely to the non-logical side of his dualistic methodological distinction and centred on the development of a sociological approach to equilibrium. His most important article in that regard was ‘The Maximum of Utility of the Collective’\textsuperscript{19} (Pareto 1913 [1999]), which was followed by his grand three volume \textit{Sociologia} (1916 [1935]).

In Pareto’s economic theory of collective welfare, direct interpersonal comparison of each individual’s ophelimity is prohibited. In his sociological theory of social

\textsuperscript{17} Full treatments of the fascinating and lively polemic between Pareto and Scorza can be found in Chipman (1976) and McLure (2000).

\textsuperscript{18} The same is also true of Pareto’s German encyclopaedia article (1902 [2008]). In Pareto’s French encyclopaedia article (1911 [1955]) maximisation of ophelimity is considered with reference to index numbers, but these index number explicitly agree with cardinal measurement of ophelimity through the introduction of ‘elementary index’ functions (Pareto’s term ‘elementary ophelimity’ from the \textit{Cours} corresponds to marginal utility in the modern sense).

\textsuperscript{19} The title of this work for the English translation is incomplete. The Italian title of the article is ‘Il Massimo di Utilità per una Collettività in Sociologia’, which should have been translated as ‘The Maximum of Utility for a Collective in Sociology’ and the omission of reference to ‘sociology’ in the English translation is regrettable.
welfare presented in ‘The Maximum of Utility of the Collective’ (Pareto 1913 [1999]), social utility is presented as a homogenous notion that is derived from interpersonal comparisons of utility by both individuals and government. This sociological work on the maximisation of utility is based on the proposition that each individual has a view about the relative benefits to society from their own consumption and from the consumption of other members of society. To maximise utility in this social sense, Pareto outlined a two-step process to measure ‘social utility’. In the first step, every individual subjectively weights the welfare of themselves and the welfare of every other individual in the community to establish each individual’s social utility function. In the second step, the government weights each person’s assessment of social utility to derive a social welfare function in which utility is a homogeneous quantity with cardinal properties, which can be maximised through government policy.

Unlike Pareto’s economic approach to maximisation, his sociological approach is not necessarily constrained by the Pareto criterion (i.e. the requirement that no one be harmed and at least one person gain) and there is obviously no prohibition on interpersonal comparisons of utility. Furthermore, there is no suggestion that utility for the purposes of social welfare considerations is an ordinal measure — in this sociological context Pareto treated social utility as a homogeneous quantity (over the period for which the prevailing social equilibrium is stable) for society as a whole. Pareto himself described his work in this area as a first step towards a ‘theory of social utility’.

In the Sociologia, however, Pareto produced an alternative – and much less deterministic – way of representing individual and social welfare that shifted away from utility fields referenced to commodity space, towards utility being referenced to individual behaviour relative to the behavioural precepts, or ‘norms’, that prevail in a society. In the figure below (Pareto 1916 [1935, p. 1,473]) the x axis is behaviour relative to the social norm, with extreme point A representing complete compliance with every social precept and extreme point B representing violation of every social precept. The y axis shows utility. Curve mnp maps an individual’s utility as his/her behaviour moves from complete compliance with social norms (point A) to complete violation of social norms (point B); and curve srv maps the utility to the collective from the behaviour of that individual.
The obvious point to note is that the utility enjoyed by the collective from the behaviour of an individual does not match the utility that an individual experiences from their own behaviour. In regard to maximisation in the above figure, this individual will maximise their utility at point \( q \), which is relatively conformist (closer to A than B), whereas the welfare of the collective is maximised if that individual behaves in a less conformist way.

In consequence, Pareto sees social utility as related to two distinct dimensions: (i) the material wealth in the community and its distribution; and (ii) the distribution of behaviour by individual members of a community around the degree of conformity/non-conformity that is revealed by individuals’ actions. This dovetails with his sociological contention that social equilibrium depends fundamentally on balance in the struggle between social continuity and social change, which depends on relative mix of individuals in a collective who are rich class I residues (the instinct for combination) and who actively seek change; and individuals who are rich in class II residues (the instinct for persistence of aggregates) and who actively defend existing social arrangements.

However, care must also be taken not to exaggerate the change in Pareto’s views on welfare over the course of his life because his notion of equilibrium, be it economic or social, is concerned with distributions about average. In the above example from the ‘behavioural’ referenced notion of social utility, the case is made that a single individual’s point of welfare maximisation from their own behaviour may not maximise that individual’s contribution to social welfare. However, when every individual is considered, collective welfare maximisation may be associated with some individuals behaving in a more conformist manner and others behaving in a less conformist manner. The end result is a distribution of compensating behaviour attained under social equilibrium based on the pursuit of self-interest not being too far from a social maximum.

“If we go on considering the various categories of individuals in that way, we may find, needless to say, a certain amount of compensation in their conduct, so that, everybody pulling for himself, a position will result somewhere in the neighbourhood of the point \( t \), where the society’s maximum utility is located” (Pareto [1916] 1935, 1578)
In substance, on normative questions, Pareto remained a supporter of liberty in behavioural matters and his final policy position on welfare maximisation is not appreciably different from that of early observations on questions of welfare. The apparatus he used to reach these positions, however, is much more developed, and it was more inclined to accommodate less deterministic positions.

5. Concluding Comment on the Significance of Pareto’s Manual

5.1 The Manual as the Lynchpin to understanding Pareto’s entire body of work

The Manual is the Lynchpin that enables scholars to relate all major aspects of Pareto’s evolving body of ideas. Its backward link to the Cours is important because the original contributions to economic theory in the Manual are still founded on general economic interdependence, although the intellectual distance already evident between Walras’s formulation of economic equilibrium and that of the Cours became even greater in the Manual. The major, and minor, developments to the pure economics of equilibrium outlined in the Manual are not logically in-consistent with the work in the Cours. In contrast, the emerging prominence of ‘non-logical’ action, and the interaction between the objective and subjective phenomena, brings a certain discontinuity to the fore in the development of Pareto’s work from the Cours to the Manual. As Pareto himself noted in the preface to the Italian edition of the Manual, the synthesis presented in the Manual relating economic and social ideas to concrete phenomena is faulty because of ‘the author’s failure to ‘dissociate himself from opinions expressed’ and because of an error that is:

“widely – indeed almost universally – regarded as a source not of error but of truth. It consists in having considered the propositions enunciated from an almost objective point of view without taking due account of the subjective phenomena. (Pareto 1906 [2014, p. xiv)

In the Manual, it is the recognition of the interdependent relationship between the objective and the subjective (i.e. the distinction between logical and non-logical action) that, in Pareto’s assessment, corrected the methodological deficiency of the Cours.

But, just as there is a very clear backward link from the Manual to the Cours, so too there is a very clear forward relationship from the Manual to the Sociologia that has a direct relationship to Pareto’s views on economic phenomena. Specifically, the introduction of the logical and non-logical distinction in the Manual, and the chapter dedicated to the principles of social science, not only provided the basis for Pareto to develop his Sociologia, it also laid the foundation for Pareto’s sociology of economic phenomena. Indeed, the chapter in the Manual on the Concrete Economic Phenomenon was perhaps his first substantive ‘sociology’ of the economic phenomenon. In particular, the critical discussion in that chapter of Ricardo’s comparative advantage relative to the fact of protection – including the social, fiscal and redistributive effects of protection – would be a
clear case of the sociology of the economic phenomenon. After the *Manuel*, the sociology of the economic phenomenon comes to the fore in fiscal and monetary policy as well as trade policy.

Alberto Zanni (in Pareto 1906 and 1909 [2014, EN6, pp 514-518]) has previously noted that between 1906, shortly after the *Manual* was published, and 1914, once the first complete draft of the *Sociologia* was ready, Pareto liaised with Guido Sensini about the possibility of jointly producing a multivolume second edition of the *Cours*. It was to be comprised of: one volume on mathematical economics; two volumes of applied economic (keeping one foot in pure economy) and one volume of sociology. In the absence of that second edition of the *Cours*, the ‘lynchpin’ role that the *Manual* in the development of an understanding the relationship between the various aspects of Pareto’s body of thought is especially significant.

5.2 Significance to the Paretian School in Italy

The significance of the *Manual* in Italy appears to be that it became the benchmark for many Paretians in their battle with ‘hedonistic’ economics of Pantaleoni and others, who were influenced by Marshall. However, those Paretians who emphasised Pareto’s mathematical economics in opposition to the hedonism approach were condemned by Pantaleoni and others for following Pareto too closely. In the end, the *Manual* became most important to those who followed Pareto in his sociological study of economic phenomena, particularly the developers of Paretian fiscal sociology (Guido Sensini and Gino Borgatta).

But there is also a group of important Italian Paretians for whom Pareto’s earlier *Cours* was arguably more important to their work on economic equilibrium than the *Manual*. In particular, Luigi Amoroso and all those under his influence wanted to develop a genuine dynamic economics that drew on the notion of inertia and habits. This group of economists could not be content with choice theory of the Manual, which was largely static. They would return to the *Cours* and attempt to develop general equilibrium dynamics.

5.3 Significance to the History of Economic Thought

The economics profession in the English speaking world did not follow Pareto in the same way that the Italian *Paretiani* did. Thanks to Sir John Hicks and others in the English speaking world, and Maurice Allais (1975) in the French speaking world, Pareto’s *Manual* is his unequivocal magnum opus for the original work in pure economic theory. In addition, as is now well known, the Edgeworth, or Edgeworth-Bowley, Box diagram was first introduced to economics in the *Manual* (1906, 1909 [2014], 95 and, 180). This box diagram has played an important didactic role in the teaching of welfare analysis over many years. And Pareto’s treatment of attempts to alter market prices under type II phenomena in the *Manual* was belatedly recognized for having dealt with issues that were being
addressed with the emergence of a much later general equilibrium literature on monopolistic competition (Kirman 1987, 806).

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