ECONOMICS

PARETO AND PIGOU ON
OPHELIMITY, UTILITY AND WELFARE:
IMPLICATIONS FOR PUBLIC FINANCE

by

Michael McLure
Business School
The University of Western Australia

DISCUSSION PAPER 09.13
Pareto and Pigou on Ophelimity, Utility and Welfare: Implications for Public Finance

by

Michael McLure*

University of Western Australia

Business School – Economics Program

ABSTRACT: In view of the distinct and seminal contributions of Pareto and Pigou to the economics of welfare, Pigou’s enduring influence in the field of public finance and Pareto’s hostility to developments in that field of study, the lack of a comparative study of their contributions is unfortunate. This study contrasts the place of ophelimity and utility and in these authors’ approaches to welfare studies. Attention is also given to the place of individuals’ consciousness of consumption by others in the treatment of economic welfare and total welfare. It is found that the substantive differences in the welfare studies of these two scholars have less to do with Pigou’s direct and Pareto’s less direct materialistic focus of welfare economics or the differing ordinal/cardinal dimensions to their analysis, than with Pareto’s and Pigou’s diverse views: on the theoretical representation of the economic phenomenon when individual behaviour is influenced by the consumption by others; and on the character of science. These last two differences are important because they have direct consequences for the scope of economic and social welfare theories and the choice between an economic or a sociological basis for the study of public finance.

*I would like to thank Amedeo Fossati and Aldo Montesano, for their helpful comments on an earlier draft of this paper, and to acknowledge Ms Karen Knight, for the discussions we have had on welfare issues that have benefited this study.
1. Introduction

As a coherent intellectual tradition, neoclassical economic thought endured and developed for more than a century. The seminal late nineteenth and early twentieth century contributions of the masters of Lausanne, Léon Walras (1834-1910) and his personally anointed successor Vilfredo Pareto (1848-1923), and the masters of Cambridge, Alfred Marshall (1842-1924) and his personally anointed successor Arthur Cecil Pigou (1877-1959), proved important to neoclassical theorising on economic phenomena. Many elements in the legacies of the Lausanne and the Cambridge traditions have been thoroughly researched and significant comparative research into these two general traditions has also been undertaken, most recently in the work of Michel de Vroey (2003, 2006) and Franco Donzelli (2008). However, these studies have been undertaken primarily with respect to Walras and Marshall, the great founders of these two traditions, and, to a lesser extent, Pareto and Marshall through the work of Erich Schneider (1961 [1999]) and Luigino Bruni (2002).

To date, however, no significant comparative study of the Lausanne and Cambridge traditions has been undertaken for Pareto and Pigou, the second generation leaders of these respective traditions. This study attempts to fill some of this gap, at least in relation to welfare studies. To facilitate this comparative study, it is necessary to recall that, in Wealth and Welfare (1912), Pigou defined an increase in economic welfare with respect to three benchmarks: (i) an increase in the size of the national dividend; (ii) an increase in the absolute share of the national dividend accruing to the poor; and (iii) a diminution in the variability of the national dividend, especially of the part accruing to

---

1 Intellectual historians have now prepared many excellent studies on the Lausanne tradition in general (Busino and Bridel 1987, Walker 1997, Bridel and Tatti 1999) and on the specific scholarship and legacy of Léon Walras (Wood 1993, Walker 2006) and Vilfredo Pareto (Busino 1974, 1999, 2006, Wood and McLure 1999). There are, similarly, many excellent studies on Cambridge and Alfred Marshall. These include Alfred Marshall’s biography (Groenewegen 1995) and reviews of Marshall’s legacy (Wood 1982, 1995 and most recently Raffaelli et al 2006). While the studies of Pigou are less abundant than in the cases of Marshall, Walras and Pareto, they are nevertheless significant: after his death memorial pieces were published (Johnson 1960, Saltmarsh and Wilkinson 1960) and in the last few decades some useful interpretative studies of Pigou’s contributions have been undertaken (Aslanbeigui 1990, 1992 and Collard 1983, 1996a 1996b, 2006).
the poor (Pigou 1912: 66). In his subsequent work, however, the third benchmark was “shunted off to Industrial Fluctuations (1927)” (Collard 1996: 586). As Pareto did not consider variability of national dividend in the context of welfare theory, the scope of this comparative paper is limited to value theory and welfare issues that relate to changes in national income and redistribution of economic goods. In the process, consideration is given to: the general Paretian theoretical conceptions of economic and social welfare; the approach that Pigou outlined in his early work on welfare economics; and the implication of this for the theoretical study of public finance.

Section 2 of the paper considers the welfare implications for a consumer when a good is also consumed by third-parties to a specific exchange. Pigou replaced the term utility with Pareto’s neologism ‘ophelimity’ when he investigated that issue in 1910. It is revealed that, when using the notion of ophelimity to differentiate between private and collective marginal market prices to explain third-party influence on valuation, Pigou attributed to ophelimity a social element to consumers’ consciousness that is excluded from Pareto’s economic notion of ophelimity. As a result, the scope of Pigou’s welfare economic is greater than the scope of Pareto’s welfare economics. In contrast, Pareto had developed a sociological approach to welfare theory in the circumstance where the welfare of individuals is influenced by the consumption of other members of society, which was grounded in his theoretical notion of utility, not ophelimity.

Section 3 considers the material basis to economic welfare maximisation. Robert Cooter and Peter Rappoport (1984) have previously established the material basis for Pigouvian welfare economics, which they contrast with the emphasis on scarcity in modern economics under the influence of the London School of Economics (LSE). The section highlights that, once the differences in scope noted in section one are set aside and attention switches from formalism to the ‘economic meaning’ of formalism, Pareto’s approach to welfare economics is fundamentally materialistic. As such, it represents the main substantive similarity between the two authors on matters of economic welfare.

Section 4 compares the issue of measurement in welfare studies in the work of Pareto and Pigou, and their respective treatment of the issue of redistribution of economic goods for welfare enhancing purposes. It shows that Pareto and Pigou each adoption
cardinal and ordinal analysis, but that they did so in different circumstanced. On issues of economic welfare, Pareto used both measures (typically ordinal measures for equilibrium analysis and cardinal measures for welfare analysis) whereas Pigou adopted cardinal measurement. On issues of broader ‘social welfare’ analysis, however, Pareto adopted cardinal measurement of utility in his sociological analysis, whereas, Pigou indicated that, in general, his cardinal measure of economic welfare may be probabilistically interpreted as an ordinal indicator of social welfare. In regard to redistribution, however, there is a substantive difference between the two: Pareto subjected the redistribution of economic goods to analytical treatment in his sociological approach to social welfare maximisation, whereas Pigou treated the matter by definition in his economic approach to economic welfare.

The final Section of the paper draws some of the logical implication of Pigou’s and Pareto’s approach to welfare to the study of public finance. In the case of Pigou, economics of public finance emerges clearly and in the case of Pareto, there is little scope for an economics of public finance, but there is scope for a sociology of public finance.

2. **Consumption by Third-parties: Implications for Economic Welfare**

Pareto formally distinguished between two types of welfare considerations: the economic welfare of the collective, which is oriented towards the study of a maximum of ‘ophelimity’ (Pareto 1896-97 [1971], 1902, 1906 [2006]), and the theory of social utility, which is oriented towards a sociological study of the maximum of utility of the collective (Pareto 1913).\(^2\) Pigou (1912: 3-13, 1932: 3-22) too made a similar, although less formal, distinction between ‘economic welfare’ and ‘total welfare’ (alternately called ‘social welfare’ or just ‘welfare’ in the generic sense). The differences between economic

---

\(^2\) In his *Trattato di Sociologia Generale* (1916 [1935]), Pareto even divided his sociological approach to maximisation into two categories: maximum of utility of the collective, in which maximisation is not constrained by the requirement that no one be harmed by a change in the social state; and maximum of utility for the collective, in which maximisation is constrained by the requirement that no one be harmed by a change in the social state.
welfare and social welfare in Pareto’s system have their origins in his distinction ‘ophelimity’ and ‘utility’.

In this Section the distinction between ophelimity and utility is employed to clarify the similarities and differences between the two masters, especially in regard to the relative scope of economic welfare and total/social welfare in the work of both authors. The legitimacy of this approach is evident from Pigou’s citation of Pareto’s work and from his adoption of the term ‘ophelimity’ in his article ‘Producers’ and consumers’ surplus’ (Pigou 1910), which provided a basis for some of the key conceptual and analytical apparatus published subsequently in Wealth and Welfare (1912). Interestingly, Cooter and Rappoport (1984) have previously invoked the distinction between ophelimity and utility to clarify the scope of the ‘material’ conception of welfare associated with Pigou (and other English economists), although they did not cite ‘Producers’ and consumers’ surplus’ (1910) and consequently did not indicate that Pigou had incorporated the term ophelimity within his work.

Pareto’s very early views on utility and equilibrium reflected the hedonistic perspective commonly associated with the work of William Stanley Jevons and Maffeo Pantaleoni. But even at that time, Pareto was conscious of the complex range of influences on human action and he chose to emphasise the need for pluralism in the study of social phenomena (Pareto 1894 [1980]: 105) and his distinction between ‘ophelimity’ and ‘utility’ was to become a major plank in the emergence of an essentially dualistic approach to the study of economic and social phenomena.

In the Cours d’Économie Politique (1896-97 [1971]) Pareto systematically dealt with the complex of influences on human action by differentiating utility, or something ‘useful’ to wellbeing or the ‘opposite of harmful’ (1896-97 [1971]: 126), from ophelimity, a mere sensation derived from the satisfaction of wants and desires

---

3 Pigou cites Pareto’s Cours, Manuale and Systèmes in Wealth and Welfare (1912: 25, 29n, 65n, 71-77, 168, 180 and 239), with many of these citations carrying through to The Economics of Welfare (1932: 74, 121n, 128, 321, and 647-655).

4 Significant parts of Wealth and Welfare concerning producer surplus and tax/bounty policy for firms with increasing/decreasing returns derive directly from Producers’ and consumers’ surplus’ (1910), including some elements that were subject to extensive critical evaluation, most notably by Allyn Young (1914) and Frank Knight (1924), with Alfred Marshall also annotating criticisms on his personal copy of Wealth and Welfare, which have been discussed in some detail by Krishna Bharadwaj (1972).
irrespective of their legitimacy (1896-97 [1971]: 1086). At the most general level, Pareto envisaged many types of ophelimity and many types of utility.

One can distinguish different types of utility according to the diverse aspects of human nature which assure development and progress. Economic utility would be that which assures material well-being, moral utility that which would produce the development of more perfect morals etc. Similar divisions can be adopted for ophelimity; as it may satisfy material, moral or religious, needs and desires etc., will be called economic, moral or religious ophelimity etc.

(Pareto 1896-97 [1971]: 129)

In his expression of economic theory, analysis was presented on an atomistic basis in the sense that his focus was on abstract *homo œconomicus* that reacts only to elementary ophelimity (marginal utility) in which the individual’s economic ophelimity is a function that has positive elements, such as the bundle of consumer goods available to the individual in question, and negative elements, such as the supply of productive services by the individual in question. While Pareto’s *homo œconomicus* is interdependent with other individuals, it has no regard for the material, moral or religious ‘wellbeing’ of other members of the collective (i.e. the utility dimension), or the material, moral or religious ‘desires’ of other members of the collective irrespective of the effect on wellbeing (i.e. the ophelimity dimension). While the acceptance of moral ophelimity, religious ophelimity etc. suggest the possibility of a logical investigation of altruism, philanthropy etc., his notion of *homo œconomicus* responds only to the forces of economic ophelimity⁵ in which satisfaction of tastes derives from an individual’s direct consumption and independently of consumption by third parties. In pure economic theory he represents relationships in a general equilibrium context, but the ‘social

---

⁵ Henceforth the term ‘ophelimity’ is used to refer to ‘economic ophelimity’ because: (i) in the *Cours*, Pareto dropped the adjective when it was clear that he was dealing with economic issues; and (ii) Pareto’s framework evolved and by the early 1900s it was simplified as a dualistic system in which ‘ophelimity’ is treated as an exogenous and subjective motivation for logical action (in terms of a means ends nexus) and ‘utility’ is largely treated as endogenous and associated with non-logical action.
dimension’ associated with an individual’s subjective motivations is deliberately set aside for study by other disciplines in the social sciences.

Pigou reflected on Pareto’s distinction between utility and ophelimity and, in his ‘Producers’ and consumers’ surplus’ (Pigou 1910), he actually substituted ‘ophelimity’ for utility when undertaking economic analysis and acknowledged the origin of the term: “the term ophelimity is due to Professor Pareto. It is free from certain ambiguities involved in the common English term utility” (Pigou 1910: 359). In an earlier article, Pigou had already rejected ‘psychological hedonism’ as an approach to utility because it is an ‘untenable and exploded doctrine’ (1903:67). However, similar to Pareto, he did not reject ‘pleasure’ per se. Rather, he rejected the notion that pleasure is the only element that influences utility: ‘We do not desire only pleasure, but numerous other things’ (1903: 67). No doubt the principle reason for Pigou’s attraction to Pareto’s neologism is that it appeared to provide a basis for accounting for that complexity. Pareto’s distinction between ophelimity and utility may also have had some influence on Pigou’s distinction between welfare in general, as something based only on ‘states of consciousness’ (1912: 3) and economic welfare in particular, which is considered with respect to material income using the ‘measuring rod of money’ (1912: 3). He pointed out that it is:

plain that anything in the nature of rigid inferences from the effects on economic welfare to effects on total welfare is out of the question. In certain cases the divergence between the two effects will be insignificant, but in others it will be wide. Nevertheless, I submit that in the absence of special knowledge, there is room for a judgement of probability.

(Pigou 1912:11)

However, some caution is required on this point there are subtle but important differences between the notions of economic welfare in the work of Pareto and Pigou. The fundamental source of these differences concerns the diverse scope for the treatment of the social element of individuals’ states of consciousness.
In ‘Producers’ and consumers’ surplus’ (1910), Pigou’s consideration of markets differentiates between *private marginal demand* prices, which are the monetary expression of ‘ophelimity’ from incremental increases in a person’s consumption of a particular good, and *collective marginal demand* prices, which are defined as the monetary expression of aggregate ophelimity for all consumers in a market following a increment in the total consumption of a particular good. *Private* and *collective* demand prices are one and the same when each individual’s monetary valuation of ophelimity from consumption resulting from voluntary bilateral exchange is unaffected by changes in the consumption of others. In the terminology adopted in this paper, equality between *private* and *collective* demand prices depends on the absence of a social element for all individual consumers’ states of consciousness: the ophelimity that a particular consumer derives from consumption is entirely independent of consumption by third-parties to the voluntary bilateral exchange process.

Two obvious and well known differences relative to Pareto are evident on this issue, namely: Pigou’s partial equilibrium focus and his specification of a monetary expression of ophelimity. When these differences and their consequences are temporarily set aside, however, the scope of ‘ophelimity’ in the context outlined above is much the same for both Pigou and Pareto. Given the purposes of this study though, the important point is to identify when the scope of ‘ophelimity’ diverge in the work of these masters. As shown below, this occurs when *collective marginal demand* prices diverge from *private marginal demand* prices, when occurs when the monetary expression of ophelimity for individuals’ gains form consumption is either increased or decreased by third-party consumption:

- The curve of the private marginal demand prices lies above the curve of collective marginal demand prices if an addition to the consumption of one consumer diminishes the ophelimity associated with a given consumption by other consumers …
- The curve of the private marginal demand prices lies below the curve of collective marginal demand prices if an addition to the consumption of one consumer increases the ophelimity associated with a given consumption by other consumers.

(Pigou 1910: 361)
In these circumstances, the inequality between *private* and *collective* demand prices depends on the emergence of a social element to individuals’ states of consciousness because some or all consumers of a particular product derive utility from their direct consumption as well as consumption by third-parties. To clarify his position on the matter, Pigou refers readers to his earlier ‘Some remarks on utility’ (Pigou 1903) which, although written before he had introduced Pareto’s notion of ‘ophelimity’ into his work, clearly attributes a social element to what he referred to as utility in ‘Some remarks on utility’ and ‘ophelimity’ in ‘Producers’ and consumers’ surplus’. In this earlier paper, Pigou introduces the argument $K\{a, b\}$ as an element within the individual’s utility function a specific commodity. More specifically:

$$U = f(..., K\{a, b\}),$$

where $K\{a, b\}$ is a ‘complex expression’ in which the elements $a, b$ comprise:

- $a_1$ = the quantity of A possessed by the individual’s first neighbour
- $a_2$ = the quantity of A possessed by the individual’s second neighbour
- $a_n$ = the quantity of A possessed by the individual’s $n^{th}$ neighbour
- $b_1$ = the ‘distance’ from an individual to his/her first neighbour
- $b_2$ = the ‘distance’ from an individual to his/her second neighbour
- $b_n$ = the ‘distance’ from an individual to his/her $n^{th}$ neighbour

If the consumption of good A by neighbours has no effect on the ophelimity enjoyed by an individual from his/her consumption of good A, the ‘distance’ in each of the elements $b$ is zero and the value of the complex expression is zero. Conversely, when the consumption of good A by neighbours influences the ophelimity that an individual enjoys from his/her consumption of good A, the ‘distance’ in each of the elements $b$ is non-zero and the value of the complex expression is non-zero. Pigou specifically introduced this ‘complex expression’ to facilitate his reflection on the proposition, put by

---

6 For consistency, the term ophelimity is used in this paper when discussing common value theory issues covered in ‘Some remarks on utility’ (Pigou 1903) and ‘Producers’ and consumers’ surplus’ (Pigou 1910).
Henry Cunynghame in ‘Some improvements in simple geometric methods of treating exchange value, monopoly, and rent’ (Cunynghame 1892), that people who like a tasteless mode of ostentation receive diminished pleasure from some commodities when they become more ‘common’.

Pigou (1903: 60-64) generalised this relationship by observing two classes of such goods: one which reflects an individual’s desire for the ‘uncommon’ (diamonds); and the other that reflects an individual’s desire for the ‘common’ (top hats among a certain class). This social influence on consumption concerns what are now called ‘positional goods’ (Schneider 2007) and Pigou himself placed these goods in the context of class association and class separation, as they relate to a force which:

operates to impel me towards commodities that are consumed by the classes with whom I wish to be associated, and away from those that are common among the classes whom I wish to separate myself from.

(Pigou 1903 p. 61).

If the influence of this complex relationship $K\{a,b\}$ upon ophelimity is non-trivial, it will unavoidably impact on market demand. Based on the assumption that “the ‘util’ can serve as a unit of measurement for the desires of different individuals” (1903: 64n), Pigou used a two person example (person A and person B) to illustrate how ophelimity for a good, tea in his example, and the consequent market demand relationship, may be dependent on the distribution of that good as it varies among consumers in the market.

Take successive increments of [good] A in the order of the magnitude of the utility they yield to no matter whom. [Individual] A’s desire for one increment of tea, that being the only increment, is $a_1$, [Individual] B’s desire for an increment, A having one, is $a_2$, A’s desire for a second, A having one and B one, is, $a_2$ [sic], C’s desire for one, A having two and B one, $a_3$ [sic], and so on.

(Pigou 1903: 64.)

---

7 Cunynghame diagram has a “consumer surplus curve lying below the commodity demand curve, but shifting upwards with every reduction in the quantity supplied” (Schneider 2007: 68)
Initially Pigou chose to deal with the influence of third-party consumption on demand by limiting the viable range for consumer surplus studies.

Are we safe in treating the marginal utilities curve as an accurate approximation to a particular utilities curve? The answer seems to be that it is only for considerable changes of market consumption that the required assumption is illegitimate. It is highly improbably that a slight change in consumption of anything would have an appreciable influence on the utility of earlier increments, because a considerable change in consumption is necessary to make us aware that any change in ‘commonness’ has taken place.

(Pigou 1903:65)

For small changes in consumption (10% in Pigou’s own example) the area under marginal utilities curve for the market can be used to consider changes in either consumer surplus or total ophelimity.

However, by 1910, Pigou had developed a more formal solution to the problem by differentiating between private and collective marginal demand prices. When private and collective marginal demand prices are coincident, the ophelimity that an individual enjoys from the consumption of a good is independent of third-party consumption. When private and collective marginal demand prices are not coincident, ophelimity enjoyed by some or all individuals in the market is not independent of third-party consumption. In this latter case, the social element of an individual’s consciousness influences his/her valuation of their benefits from consumption.

Pigou’s introduction of the term ophelimity to his work was explicitly influenced by Pareto’s studies. However, his differentiation between collective and private marginal demand prices using the economic concept of ophelimity is not in accord with Pareto’s purpose in differentiating economic ophelimity from the range of other types of ophelimity and in the Cours and the subsequent more general distinction between ophelimity in economic theory and utility in sociological theory, which came to characterise Paretian theory. Preferences for Pareto’s homo œconomicus, which responds only to the forces of economic ophelimity, are independent of consumption by third parties and, as a consequence, no place is made for positional goods within his pure
economic theory. This allowed Pareto to impose strict requirements on his definition of ‘logical action’ in the case of market exchanges. For example, when an individual’s circumstances are unchanged, constant and repeated action is taken as empirical evidence of an objective outcome emerging as a result of subjective intent being combined with a logically founded means-ends relationship. When the element of social consciousness impacts on economic behaviour, the consistency of behaviour required in Pareto’s pure economic theory is less likely to be achieved. Once an individual’s preferences are influenced by interaction with the actions and ideas of third-parties, action is considered with respect to utility and not ophelimity. Pareto classed such actions as non-logical, not because they were illogical or because it was impossible to deal with third party interactions logically, but because he observed that the subjective intent of actions and objective outcome were typically interdependent, which ruled out a strict logical nexus between the means and ends relationship.

In ‘Economia sperimentale’ (Pareto 1918), Pareto’s final contribution to the Giornale degli Economisti, pluralism in method clearly extends to the study of economic phenomena: when the ‘economic part’ of the economic phenomena dominates, he argued that analysis should primarily be based on economic theory; and when the ‘sociological part’ of the economic phenomena dominates, Pareto contended that analysis should primarily be based on sociology. Within this general system, human action related to positional goods, be they common positional goods or uncommon positional goods, would fall within the ‘sociological part’ of the economic phenomenon because individuals’ subjective intent (access to a positional good) is interdependent and path dependent with respect to the action of third-parties. Variability in the influence of

8 Indeed, from references to ‘ethical ophelimity’ and ‘religious ophelimity’ in the Cours it is apparent that Pareto initially saw some scope for analysis of logical action that is influenced by individuals’ consideration of third parties. Even the references to homo ethicus and homo religiosus in the Manuale (Pareto 1906 [2006]: 20) is suggestive of the possibility of deductive theory predicated on logical action. However, from the early 20th century when Pareto commences serious reflection on sociology, these became only tentative possibilities because he had observed that most human behaviour is non-logical: from this time onwards the dualistic distinction between ophelimity and utility assumed greater importance within Pareto’s work and was instrumental in dividing his economic from sociological enquiry.

9 I have previously argued (McLure 2001) that the ophelimity field defined by commodity space is path independent in Pareto’s economic system, whereas in the case of utility interactions between subjective intent and objective outcome, which are typically associated with a consciousness of the plight of, or the position of, other members of the community ensures that an individual’s utility field is path-dependent.

10 However, Pareto did not actually investigate the specific case of ‘positional goods’.
other peoples’ actions on an individual’s consciousness is a fundamental consideration when establishing whether study of an economic phenomenon should be examined with reference to economic theory, based on the notion of ophelimity, or with reference to sociological theory, based on the notion of utility.

Pigou’s distinction between economic welfare and total welfare suggests that he too accepts pluralism in the study of economic phenomena. However, the range of economic phenomena that can be treated using ideas and concepts from economic theory is significantly broader than was the case for Pareto. To Pigou, socially factors that influence demand, exemplified by the factors that lead to his differentiation between collective and private marginal demand prices, are an aspect of the economic phenomenon that are the subject of economic analysis. To Pareto, however, his distinction between ophelimity and utility provides the mechanism through which economic consequences that derive from the social element of individual consciousness are quarantined from economic theory and assigned for sociological investigation.

3. Pareto’s Material Conception of Economic Welfare

When Cooter and Rappoport contrasted the ‘older’ or Pigouvian oriented approach to welfare with the ‘newer’ ordinalist approach associated with the LSE, they observed that “The older definition of the subject focused upon material welfare, whereas the contemporary approach emphasises scarcity.” (Cooter and Rappoport 1984: 512) The material basis of Pigou’s approach to economic welfare is now well established and, in view of the well know and inspirational role that Pareto played in Hicks’s and Allen’s development of new welfare economics, prima facie there may be grounds to expect Pareto to have also emphasised scarcity and de-emphasised the material aspect of economic welfare. On closer examination, however, that is not found to be the case. At the substantive and formal level, Pareto de-emphasised scarcity and the economic meaning of his approach to economic welfare is, like Pigou’s, explained on a material basis.
Emphasis on equilibrium as the ‘primary’ economic phenomena is an enduring element that spans Pareto’s entire body of scientific work, but this did not involve an elevated emphasis on scarcity. Rather, it was the notion of ‘interdependence’ that was given elevated emphasis. Pareto is even critical of Léon Walras for confusing the two:

the power of the opinion according to which there had to be one cause of value was so strong that not even Mr. Walras was able to escape its influence entirely … He expresses two contradictory ideas. On the one hand, he tells us that “all the unknowns in the economic problem depend upon all the equations of economic equilibrium”, and this is a sound theory. On the other hand, he asserts that “it is certain that rareté (ophelimity) is the cause of value in exchange”; this is a reminiscence of faded theories which do not correspond to the real world.

(Pareto 1906 [2006]: 177)

Rareté, Walras term for marginal utility (ophelimity), means scarcity in French. To Pareto, scarcity was related to marginal ophelimity, but Lionel Robbins’s definition of economics is not entirely consistent with Pareto’s study of economic phenomena in which the actions of individuals are undertaken with regard to the consumption of economic goods by other people. For example, as noted earlier, Pareto considered the element of social consciousness to be a variable influence on human action, which requires sociological analysis. In that context, the objective outcome of an individual’s actions need not conform perfectly with his/her subjective intent and, as a consequence, many resource allocations cannot be examined in terms of a strict means-ends relationship based on static theory. Pareto classes such action as non-logical and considered it very important. Economic phenomena in which the government plays a large role are typically related to broad social views on the welfare of others and, in such circumstances, Pareto adopted a sociological perspective which gave prominence to interdependencies between ideas and actions, not scarcity of resources.

---

11 This translation of the Manuale and Manuel was prepared by Roger Dehem and John Cairncross for the American Economic Association and John Chipman, who kindly provided me with this text.
When Pareto did consider the relatively narrow range of economic phenomena that could be examined using economic science alone, his discussion of economic welfare also emphasised the material dimension. Although, he clearly separated the analytics of welfare economics, in which ophelimity is not interpersonally comparable, from the ‘economic meaning’ of such analytics, in which a materialistic interpretation of welfare is outlined. Pareto’s first systematic treatment of issues in economic welfare was presented in ‘Il massimo di utilità dato dalla libera concorrenza’ (1984), written some two year prior to his Cours. This paper is historically important for a number of reasons, including its: presentation of ‘maximum welfare’ in a manner that means ‘Pareto optimal’ (Chipman 1976: 89); the introduction of the compensation criterion to discussion welfare economics (Chipman 1976: 92); and an implicit statement of the second theorem of welfare economics (Montesano 1997: 5). But more fundamentally, this is the article in which Pareto established the relationship between abstract theoretical analysis and the material implications of that analysis.

This article was written in two parts, each prepared at distinct times. The first part considers the welfare gains to society as the coefficients of production are altered from those that prevail outside a state of free competition to those that would prevail under conditions of free competition. The resulting increase in output from enhancing productive efficiency, as valued in terms of the numeraire good, is shown as a welfare gain. Implicitly, Pareto had treated ophelimity\(^{12}\) as comparable and additive and applied analytical calculus to the social aggregate as an entity rather than to individuals. As such, the first part of this article has some broad consistency with Pigou’s materialist approach to welfare, as Pigou provided the material dimension to welfare through the measurement of ophelimity in terms of money and Pareto provided the material dimension to welfare in terms of the numeraire good. However, at the start of the second part of this article, Pareto reports that Maffeo Pantaleoni and Enrico Barone had alerted him to the inconsistency between his analysis and the principle that ophelimity cannot be interpersonally compared (McLure 2001: 95). Moreover, Pareto accepted the criticism and re-caste his analysis in the second part of the article with reference to individuals and

---

\(^{12}\) This article was written in 1894, two years before Pareto had introduced the term ophelimity to his work. However, for consistency in language usage in this paper, the term ophelimity is again utilised in this paper.
subject to \( du_i = \lambda_i \varphi_u \), in which \( du_i \) is the change in utility (i.e. ophelimity) for individual \( i \), \( \lambda_i \) is the valuation of the variation in individual \( i \)'s product expressed in terms of the numeraire good \( A \) and \( \varphi_u \) is the final degree of (ophelimity) utility for good \( A \).

In the process, Pareto explicitly states that the maximising condition, which requires the sum of the lambdas to be zero, is based on a summation of a material good (i.e. numeraire good \( A \)). As the final degree of ophelimity is assumed to have a positive value for economic goods in general and the numeraire in particular, a non-zero sum for the lambdas indicates that the aggregate value of product could increase, which would be indicative of a welfare gain. When society moves from a state where \( \sum \lambda_i \neq 0 \) to a state where \( \sum \lambda_i = 0 \), the numeraire valuation of total product increases. As this early article is concerned with efficiency in production and not exchange, Pareto was confronted by two problems: the distribution of the surplus produced by the change in coefficients of production was not derived from the model; and a subset of individuals within the collective are likely to be harmed as the production coefficients are changed to make the lambdas sum to zero. The first issue was not discussed in this paper, but was subsequently resolved, while the second issue was resolved by pointing out that those who gain can compensate those who lose.

In his work that followed, Pareto came to extend his analysis to integrate exchange and production (Pareto 1902) and, in the Manuel (1909 [2006]) Pareto confirmed his complete demonstration of the first order conditions for the first law of welfare economics, as expressed in terms of ‘ophelimity’ or indices of ophelimity, in which a state of free competition yields an economic maximum. He then returned to the approach from his 1894 paper to point out that, if the change in ophelimity is related to one’s material gain, such that \( \delta \varphi_i = \delta s_i \varphi_u \), the ‘economic expression’ of the first law of welfare economics is distilled to \( \delta S = \delta s_1 + \delta s_2 + \delta s_3 + \ldots \) in which \( \delta S \)

represents the amount of commodity \( A \) which, when distributed to the members of the community, would provide each of them the same pleasure as that provided by the actual consumption of the commodities \( \delta x_1, \delta y_1, \delta x_2, \ldots \). When the value
of $\delta S$ becomes zero, there is no longer any of the commodity left to distribute to all the members of the community.

(Pareto 1909 [2006]: 510-11)

The policy relevance of this is that a move towards a state of free competition will reduce waste and generate a surplus, or increase the value of economic product, that may be measured materially in terms of numeraire good A.\textsuperscript{13} As $\partial i = \delta S \varphi$, the numeraire valuation of this surplus is positively correlated with an increase in economic welfare and movement away from equilibrium under free competition will result in a ‘destruction of wealth’, a phrase that is peppered throughout Pareto’s entire body of work, which also services to underline the material conception of his approach to economic welfare.

For the purposes of this enquiry, the significance of this is that the economic meaning of Pareto’s approach to economic welfare is broadly the same as the material basis to Pigou’s approach to welfare. Formal differences exist between the two scholars. Pareto carefully distinguished between ophelimity in theoretical specifications and the ‘economic meaning’ of his theory, whereas Pigou defined ophelimity directly using the measuring rod of money. But this constitutes a difference in formalism, similar in character to other differences in formalism that derive from the partial equilibrium specification of Pigou and the general equilibrium specification of Pareto. If the substantive feature of both approaches is represented by their economic meaning, then their approaches are similar. At that substantive level, Cooter and Rappoport did not need to qualify their use of the term ophelimity, when discussing the English materialist approach to welfare, with the comment:

It is not intended to suggest that Pareto is to be countered among the ranks of material welfare economists, or imply that material welfare views were prominent on the continent.

(Cooter and Rappoport 1984: 515).

\textsuperscript{13} The approach that Pareto outlined in the appendix to the \textit{Manuel} has been termed the ‘equivalent surplus’ approach to welfare by Maurice Allais (1973), who resolved shortcomings in the second order conditions associated with Pareto’s surplus analysis by introducing a ‘distributable surplus’ approach to welfare. The matters have been discussed and generalised by Aldo Montesano (1991).
At the substantive level, the main difference does not concern the issue of a material interpretation of economic welfare, but how to account for the influence of individual’s social consciousness on economic welfare, as outlined in Section 1. To the extent that social consciousness influences material valuation, it remains: within the scope of Pigou’s approach to economic welfare, and outside the scope of Pareto’s approach to economic welfare (but within the scope of his sociological approach to welfare).

4. Measurement and Redistribution

When considering the relationship between economic welfare and social welfare in Pigou’s work, his comment that a ‘util’ serves as a unit of measurement for the desires of different individuals (1903: p.64) must be considered in conjunction with his conclusion that:

When we have ascertained the effects of any cause on economic welfare, we may, unless of course we have evidence to the contrary, regard this effect as probably equivalent in direction, though not in magnitude, to the effect on total welfare.

(Pigou 1912:11)

As such, while a unit of ‘ophelimity’ is cardinal and comparable between different people for the purposes of economic welfare considerations, a unit of ‘ophelimity’ is but an ordinal indicator of total welfare, although Pigou did not attempt to construct a formal theory of total or social welfare as Pareto did. Given Pigou’s two benchmarks for an improvement in welfare, provided the poor are not harmed, the economic welfare of the collective may initially be considered in direct material terms: a change in national income would be a cardinal and interpersonally comparable indicator of a change in

\[ W = F(Y), \]

where \( W \) is total welfare, \( Y \) is the national dividend and \( F \) is a transformation function.

---

14 That is, Pigou’s quote (above) is interpreted as suggesting that, in the absence of evidence to the contrary, \( W = F(Y) \), where \( W \) is total welfare, \( Y \) is the national dividend and \( F \) is a transformation function.
economic welfare. In that circumstance, the same change in national income represents an ordinal indicator of changes in ‘total welfare’. Pigou’s second welfare benchmark prevents increases in national income alone being used to indicate a welfare gain when that gain injures the material wellbeing of the poor. However, an increase in national income that improves the material wellbeing of the poor but also harms the material well being of others may, in Pigou’s framework, lead to a net gain in welfare. This would be the case if the improved welfare of the poor may more than offset the welfare loss from the violation of the Pareto criterion when other wealthier individuals are harmed. In comparison with Pareto’s work, at least two points require examination: the measurement of welfare changes and the relevance of redistribution to welfare.

In regard to the first point, it should be noted that any suggestion that Pigou was a cardinalist and Pareto was an ordinalist is a misleading oversimplification. Pigou considered cardinal and ordinal measures of welfare, depending on whether he was referring to economic welfare (cardinal) or total welfare (ordinal). A fundamental point for Pareto, however, is that ophelimity is not interpersonally comparable (at least not directly), which is a position that he held when working in a cardinalist tradition and maintained in his more mature works after introducing ordinal analysis to economics through choice theory.15 Perhaps Pareto greatest legacy in economics is in the area of choice theory in which ordinal indexes of ophelimity are determined by the fact of choice or by binary choice experiment. However, his main application of choice theory concerned the study of pure equilibrium itself and not to the welfare consequences of deviating from equilibrium. When he considered virtual movements in commodity space, Pareto tended to adopt a cardinal approach. That is, from 1900 onwards, his preferred means of reasoning about equilibrium was based on an ordinal conception of ophelimity in which indifference curves could be derived from observation and experiment. But in relation to matters of economic welfare, his common mode of reasoning largely relied on mathematical analysis grounded on a cardinal conception of ophelimity, the most important case being his “Di un nuovo errore nello interpretare le

15 Perhaps more precisely, Pareto consistently rejected interpersonal comparison of ophelimity in works written subsequent to part one of Pareto (1894).
teorie dell’economia matematica” (1902)\textsuperscript{16} in which cardinal specification of elementary ophelimity (marginal utility) is used to establish the first order conditions of the first law of welfare economics.

On the second point, Pigou’s proposition that redistribution to the poor can be presented as an \textit{a-priori} welfare criterion in economics is entirely alien to Pareto. Pigou, however, in \textit{Wealth and Welfare} considered that redistribution is best achieved through a national minimum wage, arguing that the policy of ‘practical philanthropists’ in favour of the establishment of a minimum wage:

is justified by analysis … if we believe the misery that results from individuals with extreme want to be indefinitely large; for, then, the good of abolishing extreme want is not commensurate with any evils that may follow from diminution of the dividend. … It is necessary to ask, not merely whether economic welfare will be promoted by the establishment of \textit{any} national minimum, but also by \textit{what} national minimum it will be promoted most effectively. … the correct formal answer to our question is given by the statement that economic welfare is best promoted by the establishment of a national minimum, at such a level that the direct good resulting from the marginal pound transferred to the poor just balances the indirect evil brought about by the consequent reduction of the dividend.

(Pigou 1912: 395-396)

Pigou significantly qualified his support for a general minimum wage in his subsequent \textit{Economics of Welfare}: his focus shifted to the principles for deriving diverse minimum wages across various industries, all considered with regard to job transfer costs, labour market imperfections and the potential for exploitative wages.\textsuperscript{17} Notwithstanding these qualifications, the issue of redistribution was still given prominence in a welfare context. It is perhaps not surprising then that a chapter is included in \textit{Wealth and

\textsuperscript{16} This study was published two years after Pareto formally introduced choice theory in the ‘Sunto di Alcuni Capitoli di un Nuovo Trattato di Economia Pura’ (Pareto 1900).

\textsuperscript{17} Takami (2009) and Flatau (1997) historically and critically appraise Pigou’s approach to fair and minimum wages in his \textit{Economics of Welfare}.}
Welfare, and in subsequent issues of *The Economics of Welfare*, in which Pareto’s law is criticised together with any inferences from that law which may suggest that governments do not have the capacity to alter the distribution of income. It appears that, as a result of his desire to reject the impossibility of redistribution, Pigou failed to appreciate the full significance of Pareto’s work in this area. Pareto may well have overstated the uniform character of distribution in the *Cours*, as Pigou pointed out, and Pareto’s wording was at times imprudent. Nevertheless, while Pareto excluded the very lowest incomes from his distribution (due to a lack of data), it is still clear that he did not rule out the possibility of effective change in the distribution of income. 18 Nevertheless, it is on this issue of redistribution that there is a fundamental difference in the work of Pareto and Pigou.

When Pareto’s considered the issue of redistribution and welfare in a theoretical, rather than the empirical, context, he: (i) quarantined the issue of the extent of redistribution from economics19 and allocated the matter to sociology; (ii) rejected the option of altering ‘coefficient of production’ to achieve redistribution goals;20 and (iii) avoided prescribing any particular redistribution as welfare enhancing. In his ‘Il massimo di utilità per una collettività in sociologia’ (Pareto 1913), the goal is not to prescribe a particular distribution of income under the guise of a criterion in welfare economics, rather, it is to determine the appropriate redistribution policy using the sociological notion of utility. Importantly, to Pareto, this was a cardinal concept: “...utility depends on the circumstances ... To determine and appraise such utility is a quantitative, not a qualitative, problem.” (Pareto 1916 [1935]: 1578). Consequently, in regard to social welfare, as distinct from economic welfare, these two theorists’ positions on measurement are the reverse from what is typically assumed: Pigou is an ordinalist and Pareto a cardinalist.

---

18 As indicated by Vincent Tarascio (1973), Pareto’s discussion in the *Cours* of the relationship between income inequality, minimum income and per capita income includes formal reference to variations in the coefficient for the distribution of income.
19 When Pareto considered the issue of redistribution in economics, it was in the context of technical supply side issues such as coefficients of production that the Ministry for Production should set once redistribution has occurred through lump sum payment. The quantum of such redistribution, if any, lay outside economics.
20 When redistribution is pursued efficiently the Ministry of Production determines efficient coefficients of production that are equivalent to what would be established under free competition, with the desired extent of redistribution of product undertaken by the Ministry of Justice. (Pareto 1894: 51-52).
In regard to social welfare, Pareto saw consciousness, or what he usually referred to as sentiment, as working in two ways, with some individuals considering other members of society favourably, by supporting redistribution from themselves and from others to the poor, or unfavourably, by supporting redistribution from others to themselves.\footnote{21 Pareto’s sociological work on the maximisation of utility tries to take account of individuals’ social consciousness by recognising that each individual has a view about the relative benefits from their own consumption and from the consumption of other members of society, in a quantitative manner. To maximise utility in that social sense, Pareto outlines a two stage welfare process. 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.}

The admirer of the ‘superman’ will assign a coefficient of approximately zero to the utility of the lower classes, and get a point of equilibrium very close to the point where large inequalities prevail. The lover of equality will assign a high coefficient to the utility of the lower classes and get a point of equilibrium very close to the egalitarian condition. There is no criterion save sentiment for choosing between the one and the other.

(Pareto 1935: 1472)

In the second step, government weights each person’s assessment of social utility to derive a social welfare function for which utility is a homogeneous quantity with cardinal properties. In effect, the first step in this assessment represents Pareto’s attempt to identify individual’s social preferences, while the second stage represents a political attempt to (a) hold individuals’ assessment of social utility constant, at least temporarily over the politically given period in which policy is undertaken, and (b) transform the assessment of social utility by all individuals in the community into a single ‘social’ unit.

\footnote{21 It should also be recognised that, in addition to welfare inspired redistribution, Pareto’s two great books on sociology extensively examine redistribution as an aspect of broad patron-client relationship between governing elites and economic elites i.e. redistribution when the government is not acting to maximise the utility of the collective, but to benefit of the government’s patrons. By and large, he considered that the phenomenon of redistribution was dominated by non-welfare objectives.}
of utility. As such, Pareto developed an analytically system intended to establish the socially desired redistribution of economic goods through government policy, which is quite distinct from the definitional solution to the redistribution issue that Pigou proposes in *Wealth and Welfare*.

5. **Implication of Welfare Studies for Public Finance**

In the *Manuale*, Pareto indicated that his aim was ‘exclusively scientific: that is, to know, to understand and nothing more’ (Pareto 1906 [2006]: 10). As such, he eschewed the development of ‘economic principles’ and searched for observable economic uniformities. Pareto’s great contributions to economics all have a strong positive element. Pigou’s goals were different in that they extended beyond the strictly positive view to include the development of an economic science that could ‘furnish a powerful guide to practice’ (Pigou 1912: 11). In reference to the course of economic inquiry, Pigou adopted two metaphors: ‘light’, to represent knowledge for its own sake; and ‘fruit’, to represent knowledge for the sake of good things that derive from it (Pigou 1935: 3). Consequently, one aspect of the difference between Pareto and Pigou on welfare economics concerns the matter of emphases, with Pigou giving much greater attention to ‘fruit’ than Pareto did.

> there will, I think, be general agreement in the sciences of human society, be their appeal as bearers of light never so high, it is the promise of fruit and not light that chiefly merits our regard.

(Pigou 1935: 4)

> But it is the diverse character of ‘light’ that lies at the heart of the profound difference in the approaches of these two great scholars to social science. Pigou suggests that students of ‘metaphysics’ may develop ‘worthy things for wanting souls’, but that it can only be light not fruit. To Pareto, however, metaphysics has no value in a scientific
sense. To the extent that metaphysical notions influence human behaviour, Pareto regarded it as an element to be considered in social science because ideas and human action had influenced the physical world. But he did not regard metaphysics (or its associated ideas) as ‘science’ or, to use Pigou’s metaphor, ‘light’. The application of logic for the development of theory must, in Pareto’s system, retain contact with reality: “as far as I am concerned, logic is an experimental science like all other sciences” (Pareto 1918:185). As a consequence of these different views of pure science, Pareto and Pigou did not share the same views on many elements in welfare theory and its relevance for public finance. Pigou’s orientation was concerned with the derivation of ‘principles’, be they welfare principles or public finance principles, all of which are probabilistically true and serve the goal of doing good in society. To Pareto, however, ‘principle’ and ‘science’ do not join forces to lead to an improvement in scientific knowledge:

… It is enough to open some books on Political Economy at random to quickly notice that the theories expounded there are not exclusively experimental. Firstly, it is extremely rare that the author has only purely scientific aims; almost always he wants to benefit somebody or something, that is, mankind, the State, his country, the poor classes, justice, morals, patriotism. …

[People from] outside the logico-experimental field expect to find a theory that foresees the facts, and preach in order to change for the better what they consider to be bad. These people almost always accomplish absolutely nothing.

(Pareto 1918 [2007]: 186 and p. 196)

The Italian tradition in public finance from the late nineteenth and early twentieth centuries marked is historically significant. It is now correctly treated as an important episode that contributed to public finance analysis of public goods and the lessons of voluntary exchange for fiscal theory, the role of the State in economic activity, the coercive character of fiscal decisions and the development of an integrated focus on both revenue and expenditure budgets. This tradition, which has been carefully reviewed in
Fausto and de Bonis (2003), was treated in an entirely dismissive manner by Pareto (McLure 2007: 120-130): discussion of the public character of ‘public needs’ was dismissed as mere ‘derivations’ (quasi logical rationalisations designed to influence Government to pursue one end or another) and the methodology of public finance was characterised as weak in a scientific sense because it lacked an experimental basis and failed to differentiate between the logical and non-logical dimensions of the fiscal activities of government.

To Pigou, pure economics is derived by deduction from hypothetical proposition, which stands in contrast with the descriptive character of realistic economics. But neither pure theory nor realistic descriptions serve Pigou’s purpose in welfare economics, which requires an element of ‘art’ such that a combination of the two will ‘compel facts to speak by thought’. Pareto did not study Pigou’s work, but he was of the view that the English were “so cosily ensconced in their utilitarian principles, they had not eaten of the Tree of Knowledge” (Hicks 1961 [1999] p.134). In view of Pigou’s greater emphasis on ‘fruit’ and less experimental definition of ‘light’, the scope of Pigou’s welfare economics goes beyond the scope of Pareto’s welfare economics, with issues related to individuals’ views on behaviour and the wellbeing of others that were treated sociologically by Pareto being treated economically by Pigou. As a result, Pareto’s concerns with the Italian public finance tradition can be readily extended to Pigou’s approach to welfare economics and the study of public finance that derives from that approach to welfare. Had Pareto studied Pigou’s work, it is likely that the prescription of redistribution as a welfare criteria would have resulted in Pigou being ranked among the ‘humanitarians’ – a term that Pareto applied to scholars in a derogatory manner when he thought that they tried to make their own sentiments in favour of the poor play a significant role in science.

In short, Pareto did not regard the phenomena dealt with in public finance as primarily economic. Rather, consistent with his distinction between ophelimity and utility and the consequent scopes of economics and sociology, he regard fiscal phenomena as primarily sociological in character. The implications of this were followed by his direct followers who developed a Paretian fiscal sociology in Italy during the second and third decades of the 20th century (McLure 2007 and Magnani 2008). Pigou however, a relatively young scholar when he introduced his welfare economics, utilised
the broader scope he specified in his economics of welfare to personally develop an economics of public finance. However, given the issues raised in this paper, it may come as no surprise to find that there is no mention of Pareto in Pigou’s *A Study in Public Finance* (1929).

In regard to the nurturing of the creative forces necessary for advancement of welfare studies and public finance as scientific bodies of thought, the experiences of Pareto and Pigou may suggest that there are spill-over benefits to the broader scholarly community when great scholars lead distinct and partly contradictory intellectual traditions. Expressed in the converse, adoption of a single agreed scientific methodology may limit the creative force of scientific activity. Without the single minded focus of Pareto and subsequent positivists with an experimental approach to logic, advances like the first and second laws of welfare economics may not have emerged in such a rigorous, definable and enduring way. But such a relentless focus on the experimental aspects of economics may have stifled the emergence of genuine scientific principles with direct policy relevance, like the notion of ‘maladjustment’ and the consequent literature concerning externalities, corrective taxes and bounties. Without Pigou’s strength of conviction in the idea that economics should be a science that provides ‘fruit’ for public policy makers, perhaps the critical literature on externalities and their application in matters of public finance may not have emerged so clearly. Similarly, the subsequent debates on market extending contracts verses government correction for market failure may not have been so productive for economic science. Students of intellectual history may do well to reflect on whether the diversity in the approaches of these two great scholars was a factor contributing to the depth and breadth of our current understanding of welfare theory and public economics.

References


__________ (1902) [1982]. Di un nuovo errore nello interpretare le teorie dell’economia matematica *Giornale degli Economisti*, 12(15): 401-33, reprinted in


