

Preface

The main stimulus for presenting this short monograph is linked to one of my first conceptual interest which can be traced back to the beginning of my studies of political economy and economic policy. A topic that caught my attention considerably was welfare economics; yet during my career, I did not have the opportunity to investigate the subject with the exception of Pareto efficiency and Walrasian equilibrium. Now, the occasion to fill the lacuna in my scientific interest has finally arrived with the present work.

This monograph links welfare functions to the study of efficiency in income distribution and to inequality and poverty, all very important applied topics in real economies. The topics are considered in a theoretical framework; no attempt is made to apply the model to any real economy, except for a short digression on Italy in the appendix.

Many theoretical and applied works study inequality and poverty. Some are based on social welfare functions, while others are statistically based. Only when assuming that a social welfare function is obtained through a democratic process, it can be considered ethically founded. Ideally, this gives strength and credibility to studies on inequality and poverty indexes based on social welfare functions. It is well known, however, that Arrow's impossibility theorem warns against seeking a social welfare function at any cost, especially when there are two or more individuals who are allowed to freely express their (transitive) preferences in a set of at least three alternatives.

Despite Arrow's negative result, it is here assumed that inequality and poverty indexes are produced from a social welfare function. The justification for this strong assumption, at the community level, is that, in practice, due to a certain uniformity in the order of individual preferences, while not considering the astonishing effects of globalization, impossible situations are very rare. In fact, in a given community, the majority of people prioritize with commonly shared characteristics: education, culture, religion, political principles, ..., undoubtedly placing some measures of constraint on the priority given to the order of preferences.

The model that I present and implement in this monograph assesses the trade-off between efficiency and inequality, in order to maximize social welfare, assumed to be an increasing function of individual incomes. When considering the economic system in general, greater efficiency is associated with greater inequality.

Individual income is assumed to be a valuable proxy for individual utility since, among other things, income is a cardinal quantity while utility is an ordinal concept. Interpersonal comparisons, thus, become meaningful when considering income, while this is not the case for utility. Individual income is taken as an argument in favour of the social welfare function, despite many economists' claim to be dissatisfied with assigning so difficult a task to it given that a number of other variables need to be considered when measuring welfare, including individual utility. In defence of the assumption made, let me point out that all magnitudes, other than income, impact individual welfare, for example education, good health and happiness. They are all strictly correlated to income (refer to the 2010 "Special Christmas Double Issue" of *The Economist*, pp. 33–36, in particular the chart on p. 36 which plots sample data on "The Geography of Happiness" for more than 90 countries, showing a positive correlation between per capita income and satisfaction scores).

The monograph is divided as follows: Chapter 1 provides a general overview. Chapter 2 gives a brief summary presentation of social welfare functions and income distributions. Chapter 3 looks at inequality and poverty indexes. Chapters 4 and 5 explicate new thoughts, as far as I am aware, at least at a formal level. They assess the relation between efficiency and inequality, showing that under very simple hypotheses, a degree of inequality in individual incomes can produce, *ceteris paribus*, greater social welfare, by increasing social production, hence total income; and that a considerable quota of the latter can be distributed to the poorest members of the community. This result is not new, of course. Many scholars, for instance Schumpeter (1954, p. 789), have said the same. I, however, would like to stress that reasoning on a specific question in verbal terms is one thing, formalizing and analysing it is another. As John Stuart Mill pointed out in his 1848 Preface to *Principles of Political Economy* in referring to Adam Smith's *Wealth of Nations*:

The *Wealth of Nations* is in many parts obsolete, and in all, imperfect.

This is tantamount to saying that anything can be improved. Therefore, I hope to have formalized, and shown by means of numerical simulations, that in general, higher individual income is associated with greater individual productivity, and consequently to a better individual contribution to social output, or material, the so-called GDP, or Gross Domestic Product. Yet, these results should not be seen as confirming some form of economic Darwinism (an aspect I have never acknowledged).

Chapter 6 briefly discusses problems that can arise from information incentives and performance, with the aim of compelling economic agents to show their true characteristics. Chapter 7 presents a summary example of the results obtained in Chaps. 4 and 5 and introduces the specific functions for implementing the simulations. Chapters 8 and 9 contain numerical implementations showing how

solutions can vary when the Public Authority changes parameters, over which it has control, with the economic objective of obtaining the

greatest felicity of the greatest number,

as proposed long ago by Bentham (1789).

Moreover, Chap. 9 introduces the dynamic counterpart of the model. It considers and applies some simple nonlinear difference equations to simulated data.

Chapter 10 provides the concluding remarks and some hints for including public goods in the proposed model. A simple model is presented and elaborated.

The appendix to this monograph applies the model to Italian income data for 2008. This exercise has been relegated to the end to underline that the monograph does not intend to be a sort of econometric exercise.

In closing, let me underline that I have not dedicated a chapter to the mathematics employed in the monograph since mathematical applications are very common nowadays. The application used is that of maximization under constraints, i.e. the well-known method of Lagrange multipliers for functions with many variables under constraints.

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