Representing or interpreting the Pareto law: the Italian debate during the 1920s and 1930s

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The Michal Kalecki's witty epigram, quoted by Josef Steindl (1965): "Economics consists of theoretical laws which nobody has verified and empirical laws which nobody can explain", well introduces this paper. Never more than in the case of the empirical Pareto law has Kalecki's witticism seemed so appropriate.

Whether Pareto's law is understandable or not, econophysicists consider the Pareto curve one of the forerunners of econophysics. The invariant distribution of income over time and space was clearly an economic phenomenon that economists were unable to account for or predict. Physicists were able to offer a different interpretation of the Pareto curve, based on appropriate methods and approaches, that contained it within the broader analysis of complex systems.

Pareto's law is introduced here as a stage in the journey towards econophysics. Its empirical features generated different interpretations and, now that it is largely a matter for the econophysicists, many issues remain concerning its stability and universality, the mobility among different classes of income, and so on.

Pareto did not really try to explain his law from an economic perspective. As he confirmed in his *Trattato di sociologia* (1916) (*The Mind and Society*. *A Treatise on General Sociology*), a view based on human aptitudes seemed to prevail. The reason for the stable distribution of income and wealth should be sought outside the strictly economic relationships. But Pareto's vagueness regarding its causes goes to show that he considered his empirical finding a "stylized fact", a stable and recurrent phenomenon characterizing past and present societies. Pareto's law is an empirical episode *par excellence*: is this model a perfect example of the application to economics of the Galileo's observation, mathematization and experimentation? When this atheoretical new rule arrived on the scene, it gave rise to a debate that is still lively today, and made Pareto one of the acknowledged founders of modern econophysics. Pareto's law seemed to show that observation could enable us to identify invariant laws in the social as well as in the natural sciences. Pareto's experience was imitated by his student, Luigi Amoroso, an economist and mathematician who continued to work on the laws of distribution, sketching another rule governing the distribution of income (an early type of gamma distribution). In this paper, this distribution laws are analyzed inasmuch as concern their formulation and the debate that they triggered enlivened by Cantelli, Vinci, Bordin, Bernardelli, D'Addario.

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