

## **LUIGI BODIO: PROMOTER OF THE POLITICAL AND HIGH SCIENTIFIC MISSION OF STATISTICS AND PIONEER OF THE INTERNATIONAL STATISTICAL COOPERATION**

Antonio Cappiello

### **Introduction**

Luigi Bodio (October 12, 1840 Milan – November 2, 1920 Rome) was an Italian economist and statistician and one of the founders of the Italian Statistics. He was one of the 21 founding members of the International Statistical Institute (ISI) in 1885, ISI Director-General during the first 20 years (1885-1905) and ISI President for 11 years (1909-1920). A short insight into his life and his professional activity may be useful to the Italian and the International Communities interested in the history of statistics and in the origins of international statistical cooperation.

### **1. Early life, education and beginning of scientific activity**

Luigi Bodio was born in Milan on 12 October 1840. His parents, Filippo Bodio and Giuseppina Agrati, were small business entrepreneurs. In Milan, Bodio completed his secondary education at *liceo-ginnasio Sant'Alessandro* while he pursued his university studies initially in Pavia and afterwards in Pisa where he received his Juris Doctor degree on the 7<sup>th</sup> of August 1861<sup>1</sup>.

In 1862 he was awarded a scholarship from the Ministry of Education to attend postgraduate economics and statistics courses in Paris. In France he had important contacts with major economists and statisticians of that time, such as Louis-Adolphe Bertillon, Emile Levasseur, Antoine De Foville and Frédéric Le Play<sup>2</sup>. From 1864 to 1872 he taught statistics and economics in various Colleges and Professional Institutes in Livorno, Milan and Venice.

His first contributions to statistical research focused on the sources, the survey methods and objectives to be achieved in order to provide reliable scientific results to the public administration bodies and to policy makers. In particular, Bodio - as delegated expert of the Ministry of Agriculture, Industry and Commerce - produced

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<sup>1</sup> Gilman F. H. 1910. *Luigi Bodio*. Publications of the American Statistical Association 12 (91): 283–285.

<sup>2</sup> Favero G. 1999. *Lo Statistico e l'industriale carteggio tra Luigi Bodio ed Alessandro Rossi (1869-1897)*. Annali di Statistica serie X vol. 19 Istat. Roma; and Bonelli, F. 1969. *Luigi Bodio*, Dizionario biografico degli italiani, Istituto dell'enciclopedia Italiana, vol. 11.

an insight study (1865) on foreign trade statistics<sup>3</sup> and on the sources of the Italian statistical system with particular emphasis on the surveys carried out in the early years of Italian Unification<sup>4</sup>. Luigi Bodio's conception of statistics was grounded on rigorous scientific observations. He considered "statistics" as a main auxiliary science and as a basis for the political and economic disciplines which needed a more experimental approach. Statistics was therefore an essential instrument for measuring, not only pure economic and technical phenomena, but also social phenomena including - for instance - moral aspects of the society<sup>5</sup>.

## **2. Evolution of the Italian Statistical System and Bodio's role at a national and international level**

In 1872 the National "Giunta Consultiva di Statistica" (Consultancy Statistical Committee) was replaced with the "Giunta Centrale di Statistica" (Central Statistical Committee) governed by the Ministry of Agriculture, Industry and Commerce and composed of the Head of the General Statistical Directorate, the representatives of each Ministry and eight other representatives nominated in accordance with the Royal Decree of 25 February 1872 n. 708<sup>6</sup>. Therefore, the Central Statistical Committee became a "decisional body" as concerns statistical data to be produced by the General Statistical Directorate, and a "consultancy body" as concerns the policies of the Directorates of other Ministries. Thus, the presence of the Ministry representatives inside the Central Statistical Committee guaranteed an important connection among the activities of the various Directorates of the Ministries.

The Royal Decree 29 September 1872 n. 1048 established the separation of the Economic Directorate and the Central Statistical Directorate, the last one becoming again an autonomous division under the direct management of the Ministry. On the 30<sup>th</sup> of June 1872 Luigi Bodio was nominated Director of the "Giunta Centrale di Statistica" by Luzzatti (Ministry of Agriculture) and the 14<sup>th</sup> of November of the same year was nominated Head of the General Statistical Directorate.

After a few years, under Bodio's leadership, statistics methodology was introduced as an academic topic (Royal Decree 11 October 1875 n. 2775) and statistical courses were compulsory taught also in Law Universities. In 1876 Bodio was editor, together with Cesare Correnti and Paolo Boselli, of the *Archivio di*

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<sup>3</sup> Bodio L. 1865. *Saggio sul commercio esterno terrestre e marittimo del Regno d'Italia negli anni 1862 e 1863*.

<sup>4</sup> Bodio L. 1867. *Sui documenti statistici del Regno d'Italia*. Cenni bibliografici presentati al VI Congresso Internazionale di Statistica.

<sup>5</sup> Bodio L. 1869. *Della statistica nei suoi rapporti coll'economia politica e colle altre scienze affini. Prelezione al corso di statistica della Scuola superiore di commercio in Venezia*.

<sup>6</sup> Antonucci E. 1937. I servizi centrali, in *Istat*, Decennale.

Statistica" (National Statistical Archive). In the same year, Luigi Bodio conducted the first official surveys on Italian migration.

In 1885 he was founding member and Director of the International Statistical Institute (ISI) and held that post until 1905. Bodio gained a solid international reputation inside the scientific community, and his statistics methodology was considered a reference for the major academics and policy makers. Paul Leroy Beaulieu<sup>7</sup> claimed: "*Le statisticien qui a le plus complètement et méthodiquement réunit les documents relatifs aux mouvements de la population dans les contrées civilisées est M. Bodio le très savant chef de la statistique italienne; il les tient à jour; c'est à ses tableaux qu'il faut se reporter*".

In 1900 Luigi Bodio was elected Senator of the Italian Kingdom and from 1901 to 1904 was General Commissioner of Migration (1901-04), an inter-ministerial body created to address and protect Italian migration abroad. In 1909 he was elected President of the International Statistical Institute and held that post until his death in 1920.

Certainly Bodio gave an enormous prestige to Italian statistics,<sup>8</sup> but his main contribution was especially to "statistics beyond national and local borders". This was well recognized, also after Bodio's death, by the international statistical community. Friedrich Zahn, President of the International Statistical Institute from 1931 to 1936, said that Bodio "*appartient avec Quetelet, Engel, Lavasseur, Bertillon, von Ottingen, von Mayr, Wappäus, von Neumann-Spallart et autres à ce noyau d'hommes de science et d'administration éminents, qui firent parvenir la statistique à une âge d'or dans la seconde moitié du dix-neuvième siècle*".

Bodio was convinced of the high political and scientific role of statistics. He enriched Italian official statistics with new methodological concepts and improved terminology, and obtained an important international reputation coordinating the activities of the International Statistical Institute. Consequently, "statistics" became a reputable "institution"<sup>10</sup> in the Italian "state apparatus", a discipline - as previously said - taught in most universities and high schools<sup>11</sup>.

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<sup>7</sup> Revue des deux mondes, tome 143, 15 Octobre 1897, p.864.

<sup>8</sup> Leti G. 2004. *The International Activities of Italian Statisticians Prior to the Second World War*. Statistica, anno LXIV, n. 2.

<sup>9</sup> Trad. : "Bodio belongs, together with Quetelet, Engel, Lavasseur, Bertillon, von Ottingen, von Mayr, Wappäus, von Neumann-Spallart and others, to the new eminent experts of Science and Administration who conducted statistics to a golden age in the second half of the XIX century".

<sup>10</sup> According to Bodio "statistics and economics should necessarily prepare and follow the legislation work".

<sup>11</sup> Patriarca S. 2003. *Numbers and Nationhood*. Cambridge University Press.

### 3. Reorganization of official statistics in Italy and knowledge sharing with leading economists and statisticians

The activities of the General Directorate of Statistics<sup>12</sup> under the guidance of Luigi Bodio, as before mentioned, represented a prosperous period for Italian statistics that for many years was among the most advanced in Europe<sup>13</sup>.

Bodio gave to the Central and local Statistical Offices a very efficient organization. He strengthened the power of the Central Office allowing it to make use of all the State Administration Offices for collecting statistical information and formulating appropriate guidelines on programs and methods of the State Administration statistical procedures.

He also centralized the analysis of all national statistics at the General Statistical Directorate (Central Statistical Office). Therefore the responsibilities of the General Statistical Directorate were expanded and covered almost all the economic, demographic, social and political fields.

Bodio's efforts in building official statistics were directed toward the recognition of the State Administration's own role, independent from political influences as veritable bureaucratic power. For this reason, Bodio promoted an "interpretative prudence" which emphasised the technical role of statistics<sup>14</sup>. Bodio's personal international prestige gave continuity to the application of the scientific methodology to Italian statistics.

From a practical point of view, in order to speed up the data analysis, Bodio proposed to automate data processing by adopting classification machines based on perforated files invented by Herman Hollerith and used in United States for the census in 1890. In 1901 Bodio's initiative allowed, for the first time in Italy, a partial automation of data processing.

Luigi Bodio, as previously stated, made a great contribution to methodological and applied statistics at the international level. He analysed issues concerning the pure statistical methodology such as sample representativeness proposed by Kiær<sup>15</sup>, as well as applied statistics. As concerns applicative aspects of statistical data, he dedicated particular attention to crime statistics, health statistics, educational statistics and some specific aspects of migration, the natural movement of

<sup>12</sup> National (Central) Statistical Office.

<sup>13</sup> Evidence of Bodio's scientific activity are also represented by the numerous scientific reports attached to the official statistics of the Italian Kingdom (1872-1900), the proceedings of the Supreme Council of Statistics (published in the *Annali di Statistica*), of the State Council, of the Commissioner for the emigration, and from the private and official correspondence with politicians, statisticians and economists. We do not have exhaustive references of his scientific work since most part of Bodio's archive in the General Directorate of Statistics was lost. Bodio's private library was donated to the Bocconi University of Milan where is currently stored.

<sup>14</sup> Favero G. 2006. I servizi statistici ufficiali in Italia dall'Unità alla Repubblica: strategie di organizzazione interna e pertinenza dell'informazione prodotta. Ca' Foscari di Venezia No. 02/NL/2006.

<sup>15</sup> Anders Nicolai Kiær (1838-1919) was a Norwegian statistician who first proposed the method of the representative sample in order to obtain information on a population.

population and the economic indexes. Luigi Bodio precisely defined some sub-categories of the migration phenomena and focused on aspects such as periodic, seasonal and temporary migration, and permanent migration (classifying the data on the basis of the information concerning the migrants' residence abroad<sup>16</sup>).

As a means of knowledge sharing about methodological and applied statistics, Luigi Bodio often used handwritten letters, the most employed instrument of communication of that period. Bodio's letters to economists, statisticians, intellectuals and politicians constitute a veritable treasure of wisdom composed of scientific and political reflections and advice. For instance, the letters of his correspondence with the economists Vilfredo Pareto and Edwin Robert Anderson Seligman contain very valuable sources of knowledge of the economic and political thought of that time.

In 1920 Luigi Bodio chaired the works of the International Statistical Commission appointed by the Council of the League of Nations<sup>17</sup>. He died in Rome on the 2<sup>nd</sup> of November 1920 at the age of 80 years.

In 1996, a Statistical Cooperation Association (named *ICstat, International Cooperation Center for Statistics "Luigi Bodio"*) was dedicated to the memory of Bodio in recognition of his dedication and promotion of the statistical cooperation. The Association, based in Rome, promotes international cooperation in the field of statistics, economics and law. ICstat coordinates technical assistance projects financed by international institutions and is particularly involved in several transition and developing countries. The association supports democratic governance, crisis prevention and recovery, human rights application and monitoring systems, post-conflict political elections and referendum. Moreover, ICstat produces studies for scientific and policy purposes.

### Acknowledgments

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<sup>16</sup> Ratti A. M. 1929. *Italian Migration Movements, 1876 to 1926*. International Migrations, Vol. II, edited by Walter F. Willcox, 440-470, New York.

<sup>17</sup> Coats R. H. 1921. *Report of the International Statistical Commission Appointed by the Council of the League of Nations*. Quarterly Publications of the American Statistical Association, Vol. 17, No. 133 (Mar.), pp. 635-638.

**References and further readings**

- ASCHIERI A. 1921. *Luigi Bodio*. *Metron*, I (21), n. 4, pp. 180-195.
- BENINI R. 1925. *Atti della Giunta Centrale di Statistica* 11/1920. *Annali di Statistica* Volume XI, n.5.
- BONELLI F. 1969. *Luigi Bodio*. Dizionario biografico degli italiani, Istituto dell'Enciclopedia Italiana, volume XI.
- COATS R. H. 1921. *Report of the International Statistical Commission appointed by the Council of the League of Nations*. Quarterly Publications ASA, Vol. XVII, n. 133.
- FAVERO G. 1999. *Lo Statistico e l'industriale carteggio tra Luigi Bodio e Alessandro Rossi (1869-1897)*. *Annali di Statistica* serie X vol. XIX, Istat. Roma.
- FAVERO G. 2006. *I servizi statistici ufficiali in Italia dall'Unità alla Repubblica: strategie di organizzazione interna e pertinenza dell'informazione prodotta*. Nota di Lavoro del Dipartimento di Scienze Economiche Università Ca' Foscari di Venezia No. 02/NL/2006.
- GILMAN F. H. 1910. *Luigi Bodio*. American Statistical Association, Volume XII, n. 91.
- LETI G. 2004. *The International Activities of Italian Statisticians Prior to the Second World War*. *Statistica*, anno LXIV, n. 2.
- MAYOR DES PLANCHES E. 1921. *Bollettino dell'Emigrazione*. *Nuova Antologia*, volume XX, n. 16
- NIXON S. W. 1960. *A history of ISI, 1885-1960*. The Hague, pp. 15-31.
- PATRIARCA S. 2003. *Numbers and Nationhood*. Cambridge University Press.
- RATTI A. M. 1929. *Italian Migration Movements, 1876 to 1926*. International Migrations, Vol. II, edited by Walter F. Willcox, pp. 440- 470, New York.
- REVUE DES DEUX MONDES, Tome 143, LXVII<sup>e</sup> année, 4<sup>e</sup> période, 15 Octobre 1897.
- STRINGHER B. 1920. *Rendiconti dell'Accademia Nazionale dei Lincei*. Sess. 5, XXIX.

## SUMMARY

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Luigi Bodio (1840-1920) was an Italian economist and statistician, considered one of the founders of the Italian Statistics. He was one of the 21 founding members of the International Statistical Institute (ISI) in 1885, ISI Director-General during the first 20 years (1885-1905) and ISI President for 11 years (1909-1920). This article gives a short insight into Luigi Bodio's life and may be useful to the Italian and the International Communities interested in the history of statistics and in the origins of international statistical cooperation.