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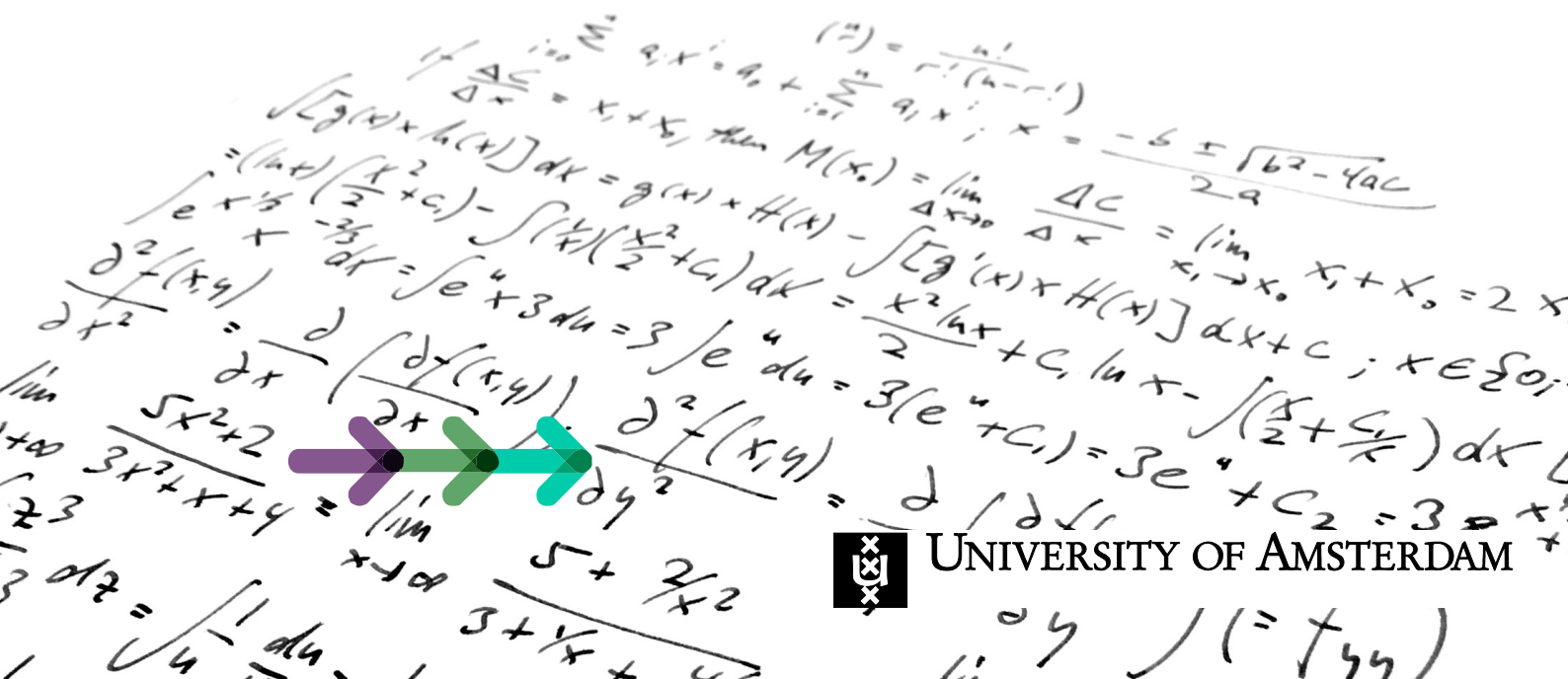
Accounting for the role of epistemic communities in developing Brazilian statistics from the 1930s to 1980s

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ABSTRACT. This paper studies three moments in the emergence of Brazilian statistics: first, the creation of the Brazilian Official Statistical Office in the 1930s; second the first economic indicators produced by the FGV in the 1940s; and finally, the transference of economic statistics production to the IBGE in the 1980s. I found that epistemic communities played an important role in creating and developing Brazilian economic statistics. More interestingly, access to knowledge from outside Brazil through migrants, conferences, and technical partnerships were important conduits for these changes to take place. Furthermore, understanding the reasons for the construction of Brazilian gauges explains the kind of relationship Brazilian society has with its statistics and the degree of independence its statistical offices enjoy.

Word count:

Keywords. political economy of statistics; epistemic communities; sociology of quantification



Introduction

Economic indicators play a crucial role in the decision-making process of modern societies. From the evaluation of government performance to the equitability of the latest salary increase, numbers expressed in economic indicators such as GDP and inflation receive wide attention and are deemed to shape how people perceive the reality around them (Lewis-Beck & Stegmaier, 2000; Soroka, Stecula & Wlezien, 2015). In order to understand this phenomenon, an increasing body of scholarship devotes its study to the societal and political implications of the construction and use of statistics (Alonso & Starr, 1989; Desrosières, 2000; Popp Berman & Hirschman, 2018). Studying mostly developed countries, scholars have made relevant contributions to the understanding of both the politics behind the construction of statistics (Herrera, 2010; Johnson, 2015; Karabell, 2014; Mügge, 2019; Tooze, 2003) and neglected aspects of the use of indicators in our everyday lives (Coyle, 2014; Fioramonti, 2013; Kerner, 2014; Linsi & Mügge, 2019).

In line with previous research in the literature, the question this article proposes to answer is: How and why were economic indicators created in Brazil? This simple but powerful question is critical for understanding the process through which economic indicators² came to play an important role in modern societies. Given the complex history of economic indicators in Brazil where, counterintuitively, the National Statistical Office was not responsible for the creation and production of the main economic indicators until the 1980s, this article makes a contextualization of the production of economic statistics through the perspective of a few epistemic communities – in short, a group of individuals with shared beliefs (Haas, 1992). For that, the article explores three crucial moments for the development of Brazilian economic statistics. The first, in the 1930s, when the National Statistical Office, the Brazilian Institute of Geography and Statistics (IBGE) the Brazilian was created. The second, in the 1940s, when the Getulio Vargas Foundation (FGV) started producing the first

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² In this article, consistently with what was argued in Tooze (2003), economic indicators, or macroeconomic statistics, encompasses indicators such as GDP, inflation and unemployment. Differently from Tooze, however, it will not consider foreign trade statistics.



Brazilian GDP estimation. Finally, the third, in the 1970s, when the IBGE turned its attention to the production of economic statistics, taking over leadership from FGV in this matter.

In order to unpack some of the historical developments concerning these moments - from the conditions in which economic indicators were constructed to the political disputes around them -, I used a process-tracing strategy. I collected information from secondary literature and, when possible, triangulated the information with more than a dozen interviews with Brazilian experts. These interviews were conducted in the context of the overarching project of which this article is a part, and thus covered other subjects besides the one investigated in this article. Ultimately, the research material offered varied perspectives on these events and allowed me to partially reconstruct these historical moments. They illustrate some of the contingent measures that allowed for the development of Brazilian economic statistics as we know them today and the decision process some players found themselves in after identifying the need for economic statistics for political and societal discussions.

Using Brazil as its empirical domain, this article contributes to the literature by explicitly adding epistemic communities as an important explanatory factor to the production of national statistics and illustrates the process of the creation of the ever-important community of statistics producers. Moreover, this contribution can be split into three parts. First, this paper reinforces the intrinsic motivation of relevant players to seek the truth through statistics. Second, it shows the maturation of economic and statistical discussions in Brazil and demonstrates the role of epistemic communities in this process. Third, it shows the complex process of construction of economic statistics in countries that do not have a critical mass of technically trained personnel. Moreover, this paper suggests that producing successful and societally relevant economic statistics requires a combination of intrinsically motivated groups, able to understand and ready to use these new tools, and the presence or the accessibility of technically competent personnel.

Following this introduction, I very briefly present how the concept of epistemic communities can be used to understand the spread of economic statistics around the world. The empirical cases are presented in sections three to six. It starts with a short and introductory section on the creation of the IBGE - when the country began the process of coordination and uniformization of its statistics. This section establishes the statistical foundations of the country and is crucial to contextualize the three moments for the creation of the Brazilian economic defined in the outset of this introduction regarding. In section 4, I introduce the production of the first economic indicators at the FGV. The last empirical part explores the



transition of the official economic statistics to the IBGE. Finally, section 6 concludes by showing how this tug-of-war over Brazilian economic statistics translated into the creation of a bureaucratic body which became an integral part of a transnational epistemic community of statisticians.

Expanding the role of epistemic communities in the sociology of quantification literature

The reasons for the production of statistics and why they gained so much attention are broadly explored in the literature known as the sociology of quantification (Desrosières, 1998; Espeland & Stevens, 2008; Porter, 1995). As Popp Berman and Hirschman (2018) argue this literature does not share general claims or have a common theoretical language but, broadly speaking, seeks to answer questions such as: What shapes the production of numbers? And when does quantification make a difference? Commonly, this scholarship dives into the history of statistics revealing their relevant actors, motivations and methodological decisions. In doing so, the literature helps demystify intrinsic processes of the ascension of indicators in modern societies.

When it comes to economic indicators, scholars show how this emblematic state tool transcended its planning function and touched the lives of ordinary citizens, by, for example, simplifying the way one understands how good or bad the living conditions in a country are and allowing for 'objective' comparisons among citizens and groups (Espeland & Stevens, 1998; Fioramonti, 2014; Karabell, 2014; Ward, 2004). This outlook has clear political implications: regular citizens can make much stronger claims about what is happening around them, and thereby become able to act or request more informed policy changes. Of all the economic indicators, inflation rate, unemployment rate, and GDP are three of the most frequently analyzed by this literature, with special attention given to the latter.

Even so, not much attention is drawn to the fact that the assimilation of these indicators by society did not follow a linear path. Indeed, in order to be accepted and utilized more broadly, it is frequently necessary to make a good case, connecting the relevance of the indicator to some explanatory theory of how these indicators may help understand reality. For instance, the first measures of national income were deemed to have not much value per se (Lepenies, 2015). It was necessary for a theory to connect this tool with its possible uses. The Keynesian



theory was the bridge for the national income measure to become societally relevant. The 1940's book 'How to Pay for the War' by John Maynard Keynes closed the circuit, giving a practical and meaningful example of the applicability of the measure (Coyle, 2014; Hallak Neto, 2014; Masood, 2016). Moreover, after the Second World War, the desire to normalize economic life demanded new evaluative tools. Countries did not need to pay for war anymore, but they had a crucial need for an economic indicator that could show the recovery and development of business and finance and its effects on society (Lewinsohn, 1967). In this post-war context, the sociology of quantification literature offers few explanations about how economic indicators spread around the world. Compulsory evaluation tools (Kerner, Jerven, & Beatty, 2017; Lepenies, 2015), international organizations pushing their agenda (Ward, 2004), and integration into the capitalist system (Herrera, 2010) are notable attempts to do so. Beyond big powers and individuals, that surely played their role, the role of epistemic communities in spreading statistical knowledge often goes unnoticed.

Epistemic communities as defined by Haas (1992, p.3) are 'network[s] of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue-area'. These communities are most importantly characterized by a shared, coherent set of beliefs (normative, principled, and causal) and a shared notion of validity. These, together, allow them to seek a common policy agenda. For such, at the very core of an epistemic community lies their shared normative and principled beliefs, which make for the minimum set of ideas inside the group. Their causal beliefs, in turn, can be considered the driving force behind their collaboration and, to a large extent, shape their common notion of validity. For the specific case of statistical epistemic communities, this implies that the common statistic to be developed need to correspond to their specific views of the world, otherwise the initiative it becomes logically invalid and wasteful.

Interestingly, this aspect will allow for variance, and to some extent, disagreements, among the groups responsible for measuring economic reality. This last aspect is one of the most significant characteristics of an epistemic community since it has the most important societal implications. They can literally alter the course of a society based on the opinion of a specific group of experts. With these characteristics in mind, the relationship between politicians and epistemic communities is frequently mutually beneficial. On the politician's side, the key aspect of using the knowledge of epistemic communities is that they reduce the uncertainty of policy decisions (Haas, 1992). On the epistemic community side, as the



community's expertise on the topic area is well regarded, they will seek avenues to cooperate with governments in order to see their agenda implemented (ibid).

Considering the formation of epistemic communities and their relevance in the policymaking process, this paper shows how economic indicators became relevant to policymaking in Brazil and how Brazilian (economic) statistics were a by-product of this process. By adding the concept of epistemic communities as an explanatory factor for the expansion of economic indicators around the world, I propose a different take on this important process. I propose that the statistical knowledge necessary for the creation of statistics in Brazil came through the integration of Brazilian experts into broader international epistemic communities. These experts, in their turn, created their own conflicting statistics to support their strategies, priorities and policy views, which in turn led the Brazilian government to professionalize the production of economic statistics, incorporating them into the IBGE's bureaucratic domain.

The following sections aim to connect these dots. Each section will explore the emergence of different groups of Brazilian experts and their 'preferred' statistics. Ultimately, the clash of notions concerning statistical validity between these communities determined the reinvention of IBGE as a bureaucratic body with the sole focus of producing the trustworthy statistics the country so sorely needed. More specifically, the next section will begin this journey by presenting what I call the 'pre-economic statistics period'. In this period there were few to no reliable economic statistics in Brazil. Not only that, worldwide, the broader idea of economic statistics was still an ongoing development. The country, therefore, had a community of professionals willing to engage with the statistical knowledge as a tool to improve policymaking but did not have much of the means to do that.

The pre-economic statistics period in Brazil

Since Brazilian independence from Portugal in 1822,³ statistics were desired as administrative state tools and were deemed as having the potential to improve

³ Historical side note: From Brazil's independence in 1822 until the foundation of the republic, Brazil was a monarchy. During this period, the country had two emperors. The first, D. Pedro I (who ruled from October 1822 until April 1831) was the son of the king of Portugal (D. João VI). The second, D. Pedro II (who ruled from April 1831 until November 1889) was the son of D. Pedro I.



administrative state planning and national development strategies (Senra, 2006). This desire to produce meaningful statistics can be found in several moments of Brazilian history. However, it took more than 100 years before the country was able to systematically produce statistics that went considerably beyond mere administrative entries. In 1936 the Brazilian Institute of Geography and Statistics was created to fulfil the role of National Statistical Office. The goal was to coordinate and synchronize the multiple statistical production efforts that were happening simultaneously around the country.

The process of creation of the IBGE was led by a small band of Brazilian elites that closely followed the most recent European events and brought to the fledgeling nation books, knowledge, and people (Senra, 2009). These professionals, also known as the IBGE's pioneers had very dissimilar backgrounds, being mostly engineers, lawyers, and demographers. Their relationship with statistics was practical. They held that statistics were necessary for the state to make more rational and objective decisions. This specific point of view was stated by Mário Augusto Teixeira de Freitas, one of those pioneers, in the first speech of the National Statistical Council in 1936: 'Make Brazil the statistics it must have, and statistics will make Brazil the way it should be' (Senra, 2006, p. 255, my translation). Teixeira de Freitas, himself, brought to the IBGE a vast experience he accumulated throughout the years working in several governmental branches, but most importantly already in these branches, he cultivated an intrinsic curiosity for the use of data for decision making. In other words, he believed – and shared this belief with his peers - that statistics was a fundamental state tool and that their production should be prioritized as it would allow for better prescriptions for the country's problems and needs (ibid).

Until his death in 1956, Teixeira de Freitas was an icon and a reference for the IBGE. He, for instance, was the main advocate for the inclusion of cartography as a competence of the IBGE. He also argued that the presence of public buildings (such as schools and hospitals) should be thought of holistically and not as dissociated things and that surveys should be able to ascertain the need for these structures. For him, the Brazilian countryside was a vast unknown, and statistics were one of the ways to 'civilize' those regions. As such, he developed the idea of statistical campaigns, in which IBGE's workers would map inner Brazil and eventually suggest ways to develop it (Senra, 2009). Finally, he believed that disseminating information was as important as collecting it; therefore, proper visual graphs and cartograms were needed in order to facilitate the comprehension of statistical office work.



Yet, the creation of the IBGE as a national institution only partially addressed the problems Brazil faced in producing statistics. The lack of specific skills to allow the systematic production of statistics that the country needed was evident. In this sense, a big boost for IBGE's knowledge and technical competence came with the arrival in Brazil of Giorgio Mortara in 1939. He was a renowned statistics professor at the University of Milan, with world-class knowledge in demography, but also probability and economic barometers, which preceded modern indicators for economic activity. At home, however, Mortara faced a hostile working environment riddled with restrictions as a result of his Jewish ancestry. Knowing about Mortara's tough times in Italy, Teixeira de Freitas invited him to move to Brazil (IBGE, 2007). The invitation was accepted and Mortara became a key player in the structuring of Brazilian statistical processes, supervising the production of the Brazilian census and training several Brazilian statisticians before returning to Italy after the war. Yet, at that time, the societal demand for statistics was pitiful, making IBGE the coordinator, the producer, and the user of its statistics (Senra, 2009, p. 272). In other words, the institute not only collected, standardized and produced data, but also analyzed it and prescribed possible solutions for local and national problems.

This peculiar aspect gradually led to increasing levels of introspectiveness within IBGE, causing them to disregard external developments. For instance, IBGE's specialists were engaged in thorough and costly traditional research approaches, being vehemently against using new statistical techniques that were proliferating around the world (e.g. sampling). That means that, given the budget constraints, the pursuit of comprehensive statistics led to numerous practical problems and delays in IBGE's work, opening their flank to harsh criticism in the 1950s and 1960s. The most relevant resulted from groups that increasingly demanded economic statistics, to whom IBGE was not ready to respond since it was notably focusing on socio-demographic statistics along with geographic information. It is important to note, however, that in the 1940s and the 1950s statistics did not resemble what we think of them today. Indeed, many economic and statistical concepts were poorly explored around the world, even less so in Brazil.

In sum, the IBGE was the result of the intensive work of an epistemic community that, despite not sharing a common background, believed that statistics could help the country to find answers for its development problems. Moreover, for the first half of its existence, the IBGE was an active institution that developed a unique group of technicians not previously



available in the Brazilian context. These people were responsible for the coordination of statistical production, their analysis and the suggestion of public policies, with important strategies concerning the settlement and development of Brazilian territory being derived from their work. Yet, as economic development discourses emerged and state planning became more sophisticated, other epistemic groups, independently and without much support from IBGE, increasingly demanded more frequent, reliable and transparent statistics, with special attention given to the ones that reflected economic activity. This new epistemic community would seek their own space among those who define national development policies, and statistics would be an important tool to achieve that goal. The next section will return us to the 1940s, the time when the seeds of economic statistics began to flourish in Brazil.

The origins of Brazilian economic statistics

As discussed in the previous section, for most of the first half of the 20th century, Official Statistical Producers gave little attention to economic figures, even less to the ones that closely relate to most of the population. The country had no indicators capable of summarizing the state of economic activity, income, employment or employment conditions. Some indicators to measure inflation were available. Yet, these indicators were produced by local administrative branches, served administrative functions and lacked consistency, reliability, and methodological transparency, in such a way that they were poorly able to inform the public about the evolution of prices in their respective areas (Lewinsohn 1967).

The availability of economic statistics in Brazil starts to change with the end of the Second World War. A central aspect of the war was the isolation of countries and the difficulty of spreading ideas, meaning that certain innovations were mostly restricted to the countries where they were created and to their closest allies. Once the war was over, Keynesian ideas, that were widely diffused in the USA and the United Kingdom, gained a greater influence among Brazilian experts (Chacel 1995). It is important to note, however, that Brazil had no Marshall Plan and, without it, there was no outside pressure to measure the economy one way or another. Yet, internal discussions over the best development model for the country were frequent. In one of those debates, the lack of available economic data became a central point of discussion. In September 1944, a special commission for economic planning was formed by the Brazilian government. The commission functioned for almost one year and the



discussions revolved around two well-regarded Brazilian economists, Roberto Simonsen and Eugenio Gudin. The lack of reliable information was Simonsen's Achilles heel (Simonsen and Gudin 2010).

... [T]here were no numbers in Brazil about almost anything, there was no balance of payments, there were no price indices that were worth anything. National income, we did not know what that was. Roberto Simonsen's main weakness in this debate was his numbers. They were provided by a person who headed the statistics section of the Ministry of Labor, Industry and Commerce and was absolutely ignorant, knew nothing about what should be done. (Antônio Dias Leite Júnior in D'Araújo, 1999, p.46 - my translation)

Simonsen used exhaustive amounts of data to make his points and establish his strategy for the country, but this data, sometimes specifically prepared for the discussion, had obvious methodological flaws which undermined the whole argument. Gudin took advantage of that and, after widely criticizing Simonsen's approach, prepared a recommendation that included giving more attention to the country's economic statistics production.

Considering that in order to analyze the economic situation of the country and to orient its economic policy it is essential to know in good time the data on national income, the balance of payments, and other indices of economic activity; considering that even in the most advanced countries, statistics and analysis of national income data are entrusted to specialized economists; and considering the enormous benefit that can be derived from the aforementioned statistical elements, it is recommended that the Brazilian Institute of Statistics should be granted a specific annual allocation for the collection and preparation of these statistics, as well as the authorization to contract specialists in the field. (Simonsen & Gudin, 2010, p.125 - my translation)

At this moment, Gudin was a board member at the newly created Getulio Vargas Foundation (FGV), which not long after would become the most prominent place to develop economic studies and economic statistics in Brazil. The FGV was created through a presidential decree in July 1944, as a private foundation with the objective of training staff for the public sector and assisting in strategic policy decisions (Fernandes, 2010). Despite being a private



foundation, most of its activities were financed by the government and many of its prominent members came from important governmental branches. This non-negligible participation of the public sector since its creation gave the FGV an ambivalent characteristic, in which the private organization was expected to assist the public sector, but also had the freedom to establish how to do that (ibid).

In 1946, under the recommendation and coordination of Gudin, the FGV created its Economic Unit. Considering Brazilian technical and material limitations, the organization brought together experts with exceptional knowledge in economics. In 1947, when some data was already available, FGV hired Richard Lewinsohn, a war refugee with ample knowledge of journalism, politics, and economics, to create a monthly publication to disseminate the available data and analyze the Brazilian economy (Flores in D'Araújo, 1999, p.30).⁴ Lewinsohn notes that his magazine, named 'Conjuntura Econômica', was a success and that it was as likely to be found 'on the table of the leaders of large enterprises as in the hands of students, and its comments were reproduced and discussed all over' (Lewinsohn, 1967, p.4).⁵ At the time, economic journalism was something new and the content of the Lewinsohn's publication could be found on the main pages of the main newspapers, feeding subsequent societal discussions (Pizarro, 2002, p. 22). The magazine showed that there was a hidden and unattended demand for economic statistics in the country. In 1951, the Economic unit of FGV became the Instituto Brasileiro de Economia (IBRE) to consolidate the knowledge that had been produced thus far.

Just like the IBGE, the IBRE also had some pioneers. Four of whom should be mentioned here. The first, Eugênio Gudin, was the most prominent self-taught Brazilian economist at the time and responsible for coming up with the idea of creating the IBRE and making it a reality. The second, Octávio Gouvêa de Bulhões, was a postgraduate economist from the American University and a technician in the Brazilian Ministry of finance who was already collaborating with the Economic Unit before the creation of the IBRE. The third, Roberto de Oliveira Campos, was a postgraduate economist from George Washington University and up to that moment had been working in the Brazilian embassy in Washington. Finally,

⁴ Beyond the creation of the magazine, Lewinsohn also elaborated the first estimation of the Brazilian GDP before the official team in IBRE could finish their first official estimation. (Chacel in D'Araújo, 1999 p.51)

⁵ For a period, 'Conjuntura Econômica' was translated into English and published outside Brazil. For some time, it was the only source of information available about the Brazilian economic. The local version of Lewinsohn's magazine is still under production in Brazil today.



Alexandre Kafka was a war refugee born in Prague who had studied economics in Geneva with Ludwig von Mises and worked in the IMF for several years before joining the IBRE's initiative.⁶ It is important to note that the first three also worked together as Brazilian Representatives in Bretton Woods in July 1944 (Schuler & Bernkopf, 2014). Indeed, Bretton Woods was the place where Campos and Gudin met for the first time, and also a great place for building a network that later shaped the production of Brazilian statistics.

Despite being individually highly qualified by Brazilian standards, one must call special attention to the fact that they all had extensive international experience and broad networks outside Brazil. In fact, both the Economic Unit and the IBRE, just like most other FGV branches, widely benefited from these international connections. The embedded foreign participation was critical for the production of economic indicators and technical training for personnel within the FGV. The Foundation's experts had workshops, classes, and direct interaction with professionals coming from multiple countries such as Sweden, England and the USA. Among them was Jacob Viner from the University of Princeton and Hans Singer from the United Nations (Santos in D'Araújo, 1999, p. 51). The first was considered one of the intellectual mentors of the Chicago School of economics. The second was a reputable UN economist, also known as the 'pioneer of development ideas' (Maxwell, 2003).

Specifically concerning income estimation, J. B. Derksen, a staff of the UN, came to Brazil for a couple of months and helped to roll out the framework that was under development in the UN at that time. After Derksen left, the exchange between Brazil and the UN was maintained through two other UN economists that were hired by FGV and spent many years in Brazil (Kafka in D'Araújo, 1999 p.55). Genival Santos, responsible for the National Income measurement at the time, said that the presence of these professors and professionals was positive 'because we were a country of ignorant people, we were in the scientific darkness, and these people, each of them, brought us a pre and postwar experience' (Santos in D'Araújo, 1999, p. 51). This highly motivated, newly formed Brazilian technical body was unified by the idea of planning and developing the country and benefited from international connections that allowed them to know and experience what was happening outside Brazil.

⁶ He considered the period of his participation in IBRE to be the most important phase of his life (D'Araújo, 1999, p.55).



Because of that, there was access to invaluable technical foreign expertise which allowed the FGV to present itself as the most important economic think tank in Brazil.

FGV's work resulted in economic statistics that became pivotal in Brazilian societal discussions and planning. In the end, both IBGE's and FGV's epistemic communities had in common the objective of understanding the country through numbers and proposing alternatives for development. The differences in these communities' approach, however, were big enough that both communities did not confront each other. Quite the opposite, FGV's professionals knew that they should not disregard IBGE's help (Skype Interview with Maria Alice Gusmão on 20/09/2018). In fact, the FGV produced very little primary data and needed information collected by the IBGE to calculate their own indicators. With time, however, as new techniques for measuring the economy were developed, the demand of the FGV for IBGE's data increased. But, as mentioned in the previous section, the IBGE was reluctant to adopt modern statistical techniques and could not properly keep up with external demand. This created an awkward situation in which FGV's work was limited by the availability of information that the IBGE was able to provide. The unsustainability of this situation led to major changes in the IBGE during the 1970s. These changes are analyzed in the following session.

The reinvention of the IBGE

Back to the 1960s, the importance of economic statistics, with multiple competing ideas concerning statistical formulation and prioritization, was already clear. The FGV was only one of several institutions that competed with the IBGE in the sense of producing alternative statistics, but they also collaborated for the common good by widening and deepening the statistical debate and disseminating information. Yet, the intensification of the use of economic statistics by other societal groups generated demands that 'IBGEanos'⁷ were not able to meet due to its neglect of comprehensive economic data. Bombarded by criticism, the required changes would go far beyond merely producing a new set of statistics following predetermined procedures. It was necessary to completely overhaul the mindset of those who worked in the IBGE.

⁷Expression used to describe those who work to IBGE and share the "IBGE's spirit".



At the end of the 1960s, a transition commenced in which the IBGE would assume a more active role in the production of Brazilian economic indicators, and the hegemony of the FGV in this area would begin to dwindle (Chacel, 1995). The reform of the statistical system in the 1960s established that the IBGE should assume responsibility for the production of the official national accounts. But the FGV - which had strong ties with powerful ministers - was, to some extent, financially dependent on the revenues indirectly earned from the production of statistics such as the national accounts and price indexes. Thus, in a conciliatory move, the responsibility for the production of Brazil's National Accounts remained with the FGV up until the 1980s (Ibid). Notwithstanding this, there was disappointment among FGV technicians over the lack of primary data produced by the IBGE, which would have allowed for a more detailed and precise estimate of the national income (Simonsen, 1991).

At this point, Isaac Kerstenetzky, a leading researcher on national accounts at the FGV, was invited to become president of the IBGE (Simonsen, 1991). Coming from the FGV and having been trained under Jan Tinbergen, Kerstenetzky had a different perspective on the use of statistics which contrasted with that of the IBGE. Kerstenetzky wanted the IBGE to shift their attention from analytical demographic work to the production of high quality, detailed, pure statistics that could offer alternative insights for society. As Simonsen (1991) puts it, most of what "Brazilian scholars objectively know about Brazil is thanks to his work". This quote, however, tells only part of what Kerstenetzky actually meant. He was a well-respected technician with a solid international background and, most importantly, a high degree of political independence who led the IBGE for 11 years during the most arduous period of the Brazilian Military Government (ibid). His presidency was also a milestone for the IBGE, which inaugurated a new era of transformations in the institute. He established a new set of expectations of what being an IBGE president meant. Starting with him, most of the following Presidents of the IBGE have had post-graduation diplomas, mainly from international universities, and social science backgrounds, mainly in economic and political sciences (see Table 1).



Table 1. Presidents of the IBGE 1936-2019

Presidents	Period	Highest Education	Institution	Specialty
José C. M. Soares	1936-51	B.S.	São Paulo Law School	Law, Political Economy, Finance
Djalma P. Coelho	1951-52	B.S.	Military Engineering Institute	Engineering and Geography
Florêncio C. A. Silva	1952-54	B.S.	Law and Social Sciences School	Law
Elmano G. Cardim	1954-55	B.S.	Rio de Janeiro Law School	Law and Journalism
José C. M. Soares	1955-56	B.S.	São Paulo Law School	Law, Political Economy, Finance
Jurandir C. P. Ferreira	1956-61	B.S.	Rio de Janeiro Polytechnic School	Engineering
Rafael da S. Xavier	1961-61	B.S.	Recife Law School	Law, Business and Statistics
José J. de S. F. Alvim	1961-63	B.S.	Rio de Janeiro Law School	Law
Roberto B. Accioli	1963-64	B.S.	Rio de Janeiro Law School	Law and History
Agnaldo J. S. Campos	1964-67	-	-	Warfare
Sebastião A. Ayres	1967-70	-	-	History and Math
Isaac Kerstenetzky	1970-79	M.S.	McGill University	Economics
Jessé de S. Montello	1979-85	PhD.	UFRJ and FGV	Actuarial Sciences and Economics
Edmar L. Bacha	1985-86	PhD.	Yale University	Economics
Edson de O. Nunes	1987-90	PhD.	University of California	Political Sciences
Charles C. Mueller	1988-90	Post PhD	Vanderbilt University (PhD)	Economics
Eduardo A. Guimarães	1990-92	PhD	University College London	Economics
Eurico de A. N. Borba	1992-93	B.S.	PUC-Rio	Economics and Math
Sílvio A. Minciotti	1993-94	Ph.D	University of São Paulo	Business Administration
Simon Schwartzman	1994-99	PhD	University of California, Berkeley	Political Sciences
Sérgio B. Vianna	1999-03	M.S	PUC-Rio	Economics
Eduardo P. Nunes	2003-11	PhD	Unicamp	Economics
Wasmália Bivar	2011-16	PhD	Università Commerciale Luigi Bocconi	Economics
Paulo R. de Castro	2016-17	PhD	University of Chicago	Economics
Roberto Olinto	2017-19	PhD	Rio de Janeiro Federal University	Engineering
Susana C. Guerra	2019-	PhD	Massachusetts Institute of Technology	Political Science

Source: Elaborated by the author

His ideas consisted of implementing modern statistical techniques at the IBGE and expanding the economic statistics agenda. Aligned with the broader objective of expanding the production of economic statistics, his work at the head of the IBGE consisted of expanding primary data collection and preparing the institute to assume full production of the National Accounts. This last objective was particularly complex. First, because of



political conflicts that this transition would create. Second, because most of the competent technicians regarding National Accounts were in the FGV. Modestly, he focused primarily on the expansion of primary data and on the calculation of the national income via input-output matrices, which was not covered in the FGV's calculation. These matrices, however, ultimately allowed for an alternative estimation of the national income, creating an awkward situation in which it was possible to draw two distinct results from the same aggregate sample (Nunes, 1998).

This situation endured until 1986 when the IBGE incorporated FGV's technicians responsible for producing the official National Accounts. Maria Alice, the coordinator of the National Accounts team at the FGV at that time, has described this merger as extremely friendly. She recognized that the FGV's methodology and training were becoming obsolete, due to a lack of resources, and that the IBGE at that time had a more dynamic and interesting situation (Skype Interview with Maria Alice Gusmão on 20/09/2018). The collaboration of both institutions came about following the advice of the Institut National de la Statistique et des Études Économiques (INSEE), which was requested to analyze ways to improve the production of Brazilian economic statistics in the National Statistical Office. In fact, the partnership with the INSEE intensified and was decisive for the formation of the new economic statistics knowledgebase in the IBGE (Senra 2009). For instance, this partnership allowed the IBGE to anticipate new trends by measuring national income, with the IBGE's team being trained and prepared to implement the forthcoming System of National Accounts 1993 manual, even before the manual was published.

The INSEE's consultancy represented a new important behavior pattern of the IBGE. Certainly, it was not the first of its kind. Yet, the collaboration with other statistical institutes was, for sure, intensified. At its own convenience and with a lot of agency, the IBGE chooses the best international institute to collaborate with, depending on its own goals. In 2018, the institute published the first edition of its internal magazine called International Relations News, with the sole objective of spreading internally the various initiatives the institute's members got involved in as well as other international initiatives that might be of interest to its employees. As Roberto Olinto describes in an interview for the first edition of this magazine, "IBGE is big, but it needs to be recognized as such", and he continues by illustrating that when the institute presents itself as a respectable organization, they receive invitations for high-level meetings and workshops, which would not happen otherwise (IBGE, 2018, p. 6). All this illustrates the long path taken by an institute



which, behind the ambition of becoming internationally relevant, has a long experience of developing statistics for a developing country such as Brazil.

In sum, at the beginning of the 20th century, when Teixeira de Freitas saw clearly the key role of relevant statistics for Brazilian development, statistics were predominantly a State tool used to assist in the settlement and development of the national territory and the management of social affairs. Almost half a century later, Kerstenetzky started an important process in which the production of statistics, with special attention given to economic statistics, was slowly being redirected to answer everyday economic interests of society. As attention to the production of economic statistics increased, the institute also became more transparent, shifting its focus from consuming to producing statistics which reflected society's needs. In this process, one important characteristic of an epistemic community was lost. IBGE's community no longer sought to design development policies shaped by shared causal and normative values but became a community of professionals focused on the quality of statistics and actively participating in international discussions about how to improve statistics around the world.⁸

Conclusion

This paper described the creation of Brazilian statistics by revealing the activities of two different epistemic communities. First, a group that believed that statistics would improve the self-discovery of the country and therefore aid in the formulation of better policies. Second, a group actively involved in new international approaches toward (economic) statistics. The inner disputes among these groups, although much of the time not explicit, led to a professionalization of the production of statistics in Brazil, the consolidation of a broader interest in statistics in the country, and the internationalization of its bureaucratic body.

It also showed that the origin of Brazilian economic indicators diverged from the mapped experience of other countries. As discussed in the previous chapter, the motivations for measuring National Income in the US and the UK were, respectively, to understand the vast 1929 crisis, and subsequently to pay for the Second World War. For other European countries, the motivation was, to some extent, to track the development achieved in the

⁸ Research interview with high-ranking professionals at the IBGE, Rio de Janeiro 15-23 February 2018.



Marshall plan. For post-communist countries, it was about integrating into the capitalist system. While in a substantial number of developing countries, it was about following the lead of international organizations. Conversely, in Brazil, it was about the motivation of a small group of people who were well connected to governmental activities and believed that these numbers would help design better strategies for Brazilian development.

Moreover, the relative stability and incremental improvement characteristic of Brazilian statistics can be considered remarkable. As Lanata Briones (2016) demonstrates for the Argentinian case, it is plausible that unstable political environments can lead to the complete overhaul of the statistical leadership and the whole reinvention of the statistical system every few years. The analysis of epistemic communities explain how the Brazilian statistical system managed to hold together and thrive even within a volatile political environment. Further research, however, is necessary in order to clarify and expand some of the dynamics brought in this article.



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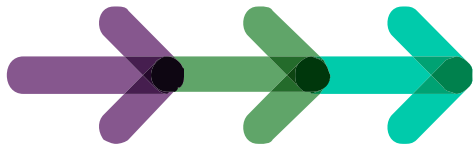
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Fickle Formulas

Handwritten mathematical notes and formulas:

$$\sum_{i=0}^n a_i x^i = a_0 + \sum_{i=1}^n a_i x^i; \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
$$\lim_{\Delta x \rightarrow 0} \frac{\Delta c}{\Delta x} = \lim_{x_1 \rightarrow x_0} \frac{c(x_1) - c(x_0)}{x_1 - x_0} = 2$$
$$\int [g(x) \times h(x)] dx = g(x) \times H(x) - \int [g'(x) \times H(x)] dx + c; \quad x \in \mathcal{D}_0$$
$$\int e^{x/2} \left(\frac{x}{2} + c\right) dx = \frac{x^2}{2} \ln x + c_1 \ln x - \int \left(\frac{x}{2} + \frac{c_1}{x}\right) dx$$
$$\int e^{x/2} dx = \int e^{u/2} \cdot \frac{1}{2} du = \frac{1}{2} \int e^{u/2} du = \frac{1}{2} \cdot 2 e^{u/2} + c_1 = e^{x/2} + c_1 = 3e^{x/2} + c_2 = 3e^{x/2} + c_2$$
$$\frac{\partial^2 f(x,y)}{\partial x^2} = \frac{\partial}{\partial x} \left(\frac{\partial f(x,y)}{\partial x} \right)$$
$$\frac{\partial^2 f(x,y)}{\partial y^2} = \frac{\partial}{\partial y} \left(\frac{\partial f(x,y)}{\partial y} \right)$$
$$\lim_{x \rightarrow \infty} \frac{5x^2 + 2}{3x^2 + x + 4} = \lim_{x \rightarrow \infty} \frac{5 + \frac{2}{x^2}}{3 + \frac{1}{x} + \frac{4}{x^2}} = \frac{5}{3}$$
$$\int \frac{1}{\sqrt{u}} du = \int u^{-1/2} du = 2u^{1/2} + c = 2\sqrt{u} + c$$

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