

RECONSTRUCTING OFFICIAL STATISTICS: A NEW ESTIMATE OF THE ARGENTINE COST OF LIVING INDEX, 1912-1943

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ABSTRACT

This paper produces a new estimate of the Argentine cost of living index (COLI) for the period 1912-1943 that amends the oversights of the official series. The lack of an appropriate splice when the shares of the index's components are changed explains the divergence between the official and the Reconstructed COLIs. The 17.3 percentage-point gap for the period 1912-1943 between the official series used by the historiography and the Reconstructed COLI accounts for the oversights of the official estimate. This divergence is also evidenced when generating real wages. Hence, when Juan Domingo Perón arrived at the National Labour Department in 1943, all else being equal, workers of the City of Buenos Aires were worse off economically than the historiography assumes.

Keywords: cost of living index, Argentina, real wages, history of statistics

JEL Code: B41, N36, N01

RESUMEN

Este trabajo produce una nueva estimación del índice del costo de vida (ICV) argentino para el período 1912-1943. La razón principal de la divergencia entre el ICV oficial y el ICV re-construido es la falta de un empalme apropiado cuando se modifican las participaciones de los componentes del

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índice. Existe una brecha de 17,3 puntos porcentuales para el período 1912-1943 entre la serie oficial utilizada por la historiografía y el ICV reconstruido que corrige los errores existentes en el ICV oficial. Esta divergencia también se evidencia al considerar salarios reales. Por ende, cuando Juan Domingo Perón llegó al Departamento Nacional del Trabajo en 1943, los trabajadores de la Ciudad de Buenos Aires poseían una peor situación económica de lo que supone la historiografía.

Palabras clave: índice del costo de vida, Argentina, salarios reales, historia de las estadísticas

1. INTRODUCTION

Real wages are a crucial statistic for economic historians. They are used to quantify the monetary standard of living (Feinstein 1998; Clark 2001, among others) and examine how it has changed over time as well as to study inequality (Lindert and Williamson 2001; Frankema 2012; Arroyo Abad and Astorga Junquera 2017, among others). The Great Divergence debate, moreover, has been approached by comparing real wage estimates (Allen 2001; Broadberry and Gupta 2006, among others). To elaborate real wages, price indices are needed.

In their origins, price indices that measured the cost of living «helped to stabilise capitalist class relations by providing a scientific measure of «fair» wage increases» (Hayes 2011, p. 99). The International Labour Organisation explains that, before 1914, given slow price movements, wages were set through bargaining rather than automatically to reflect changing prices. During the First World War, the situation changed and cost of living indices (COLIs)¹ became tools to adjust long-term contracts, especially wages (ILO 1925, pp. 7-8). Since the Second World War, price indices—particularly those that measured the cost of living and the fluctuations of consumer prices—have had economic functions that are dissociated from their earlier social objectives, influencing their construction as well as the relationship between social classes and the state (Hayes 2011, p. 97). Moreover, COLIs allow indexation, «the most extreme use of economic statistics in political life» (Stapleford 2009, p. 5). Indexation makes government tasks technical, administrative and impersonal, eliminating political responsibility in any activity linked to the procedure. Through indexation, COLIs describe previous empirical events and prescribe future behaviour (Neiburg 2006, p. 614). They are crucial to

¹ When analysing the indicator that measured price movements in the first half of the 20th century, it is historically appropriate to use the term COLI because the statistic was referred to with that name by those that developed and used it.

understand how statistics are constructions that, in turn, require analysis. For Stapleford, there is no universally valid and correct way to estimate COLIs because, when constructing them, ambiguities exist, and methods depend on the index's expected uses (Stapleford 2009). Constructing a COLI raises questions and criticisms for which there can be no apolitical answers.

By the 1920s, France (Touchelay 2015; Jany-Catrice 2018), Germany (Tooze 2001), the United Kingdom (Searle 2015; O'Neill, Ralph and Smith 2017) and the United States (Stapleford 2009), among other countries, had begun to publish COLIs. COLIs were also estimated in Argentina, Chile and Peru². Argentina stands out because, unlike its Latin American counterparts, the weights of the Argentine COLI were based on a household budget survey, rather than being a simple average of prices. Hence, the first estimate of the Argentine COLI was closer to the British, German and U.S. indicators than to its regional peers. However, during the first half of the 20th century the Argentine index had its own characteristics and peculiar trajectory (Lanata-Briones 2021). Measuring price changes is particularly relevant in Argentina because, since independence, the country has experienced recurring episodes of inflation (Amaral 1988; Irigoin 2000). The behaviour of Argentines has been affected, generating both interest in price indices as well as in domestic inflation theories. Indeed, the index has become so relevant that it has been used as an indicator of a government's success or failure in overseeing the economy. Hence, the Argentine price index is a political statistic that addresses a longstanding macroeconomic problem (Daniel and Lanata-Briones 2019, p. 128).

This paper builds on and expands the existing analysis on the construction, use and problems of the first two estimates of the Argentine COLI. The foundational indicator, or the Bunge COLI, was released privately in 1918 and publicly in 1924. The DNT COLI was published officially in 1935 by the National Labour Department (*Departamento Nacional del Trabajo*, DNT). The two estimates were merged to establish what this paper calls the official COLI that is widely used by the historiography (see Table A1 in the Appendix). For the period 1912-1943, this paper generates the Reconstructed COLI, a new estimate of the Argentine price index that is then used to produce a real wage series. The year 1912 is chosen because that is the first data point of the rent data series produced by the *University of Córdoba's* Statistical Institute (*Instituto de Estadística*, IE) based on data published in newspaper ads (IE 1944). As it is explained, this price information is crucial to re-estimate the COLI. The year 1943 is a

² See National Industrial Conference Board (1927, pp. 41, 85-88, 309-311). The International Labour Organisation only referenced the case of Chile and Peru (*ILR* 1927, p. 123). Most Latin American COLIs were published in the 1930s (IASI 1947, pp. 93, 144, 243, 301).

turning point in the history of the Argentine statistical system. On the one hand, after being an archipelago of different offices, from 1943 onwards there is a drive towards centralisation within the national statistical apparatus (González Bollo 2014, pp. 219-249). On the other, the ever-increasing demand for information that begins in 1943 encourages greater institutionalisation of the statistical apparatus (Daniel 2018). How does the Reconstructed COLI compare with the official COLI? How do Argentine real wages evolve between 1914 and 1943 when estimated using the Reconstructed COLI? In answering these questions, this paper focuses on the production of Argentine price indices in the first half of the 20th century. While there is considerable research on the country's 21st century index (Cavallo 2013; Lury and Gross 2014; Cavallo *et al.* 2016; Daniel and Lanata-Briones 2019; Lanata-Briones and Daniel forthcoming), the study of 20th-century price indicators is scarce (Cuesta 2016; Heredia and Daniel 2019; Lanata-Briones 2021). The examination of the Argentine official COLI contributes to the debate on the economic statistics produced and published (Tooze 2008; Jerven 2013; Didier 2020; among others), focusing on Argentina. The analysis of real wages using the Reconstructed COLI enhances the debate on Argentine real wages and inequality during the interwar period (Vence Conti and Cuesta 2014; Newland and Cuesta 2017; Santilli 2019). This paper shows that the lack of an appropriate splice is at the core of the divergence between the official and the reconstructed indices. Other problems include the use of wholesale prices instead of retail, the alteration of the budget structure without sufficient evidence and the inaccurate choice of the characteristics of the «average» family. The inappropriate splicing implies a divergence of almost 10 percentage points for the period 1912-1943 between the official COLI used by the historiography and a COLI that is the same as the official COLI but appropriately spliced. There is a 17.3 percentage-point gap between the official series and the Reconstructed COLI for the period 1912-1943 that accounts for most of the oversights of both the Bunge and DNT COLIs. The Reconstructed COLI is an example of how different assumptions generate different results suggesting that it is crucial to understand the assumptions behind the construction of price indices. An implication behind the real wage estimates is that when Juan Domingo Perón arrived at the DNT in 1943, all else being equal, workers of the City of Buenos Aires were worse off economically than the historiography assumes.

This article is structured as follows. The second section explains why statistics are an object of study in themselves. The third section explains the problems of the Bunge and DNT COLIs as well as the sources and methodology behind the Reconstructed COLI. The fourth section analyses the trajectory of the new price estimate. The Reconstructed COLI is then used to examine the behaviour of real wages for the period 1914-1943.

The sixth section examines political drivers behind the construction of the official Argentine COLI. The last section concludes.

2. PRODUCTION AND USE OF ECONOMIC STATISTICS

Grounded on the belief that statistics should reflect reality, nation-states produce and rely on statistics. However, for Desrosières «reality» is informed by the fairly unconscious intermingling of several attitudes to reality» (2001, p. 339). Statistics are not a simple realistic measurement operation, a reflection of reality. They influence the constitution of our shared reality. To elaborate statistics, definitions are needed *a priori* to determine the phenomenon to be measured and the aim of quantification. Even though statistics can be perceived as facts detached from producers and users that are unproblematic and certain, quantification and its results are not objective. They involve debates about methods, interpretation and use. Poor numbers, specifically, are bad in themselves; they provide misleading knowledge that generates unreliable conclusions (Jerven 2013). Hence, statistics should be conceived as «historical sources» (Tooze 2008, p. 683) and as the result of constructions and conventions subject to norms established by individuals. Based on sociology of quantification and sociology of economic knowledge this paper studies a specific official statistic and produces a new estimate of it.

Sociology of quantification analyses how statistics develop together with public and private efforts to organise and control society, emphasising the political reasons behind their construction (Alonso and Starr 1987; Anderson 1988; Porter 1995; Desrosières 1998; Curtis 2001; Tooze 2001; Hacking 2010; Loveman 2014). Sociology of quantification is a «theoretical-cum-practical pursuit», where scientific, administrative and political aspects are closely related (Prévost and Beaud 2012, p. 6). Statistics «provide a summarised description of them [situations] that can be remembered and used as a basis for action» (Desrosières 1998, p. 13). To achieve this, a political space of equivalence and encoding must be constructed together with mathematical processing. For Desrosières, statistics are formalised, synthetic concepts that are «the result of a historical gestation punctuated by hesitations, retranslations and conflicting interpretations» (1998, p. 2).

COLIs are instruments of economic knowledge. Sociology of economic knowledge studies the relationship between ideas, individuals and institutions, enhancing the relevance of the context since context influences what and how questions are answered, and the artefacts produced (Furner and Supple 1990; Fourcade 2009). Social and economic problems impact the generation of economic knowledge (Hayes 2011). Economic knowledge and its transformation into policy and policy instruments relate to national

intellectual traditions, despite systematisation (Neiburg 2006; Fourcade 2009). Constructing numbers is a social process that implies following and applying rules. These actions are decisions made by individuals that are embedded in the society they belong to; political and economic forces influence their professional identities, activities and projects (Fourcade 2009).

3. TOWARDS A NEW ESTIMATE OF THE OFFICIAL ARGENTINE COLI: PROBLEMS, SOURCES AND METHODOLOGY

Economic historians working on Argentina generate trustworthy historical data (Cortés Conde *et al.* 2018, p. 31). However, unlike GDP estimates that exist for different time periods (Harriague and Rayes 2018), and the questioning of the foreign trade numbers (Tena-Junguito and Willebald 2013; Kuntz-Ficker and Rayes 2017), the historiography that focuses on Argentina during the first half of the 20th century has systematically used the same COLI without questioning it (see Table A1 in the Appendix). For the period 1910-1943 this COLI is the combination of the first two estimates of the index that Lanata-Briones (2021) renames the Bunge COLI and the DNT COLI, respectively. These estimates were first merged in 1937 (DNT 1937). This is the first long-term estimate available of the Argentine COLI (Lanata-Briones 2020a) that was later reproduced and updated until 1960 in the 1963 report of the National Bureau of Statistics and Censuses (*Dirección Nacional de Estadísticas y Censos*) (DNEC 1963). That long-term estimate is renamed here the official COLI. While many works use these primary sources, some reference non-official series or secondary sources; della Paolera and Ortíz's (1995), Díaz Alejandro's (1981) and IERAL's (1986) being the most common. As Table A1 in the Appendix shows, both della Paolera and Ortíz, and IERAL reference Díaz Alejandro, who, in turn, relies on the National Bureau's series. Until now, these cost-of-living estimates have been taken for granted without proper analysis of how they were produced³.

Given the problems with both the Bunge and the DNT indices that this section explains in detail, it is possible to elaborate a new COLI—the Reconstructed COLI—that amends these issues for the whole interwar period. Sociology of quantification argues that statistics are not a simple realistic measurement operation, a reflection of reality. They influence the constitution of our shared reality. Based on this precept, the Reconstructed COLI is elaborated using information available to its producers at the time the official indices were constructed. This section individually describes the characteristics and problems of the first two estimates that comprise

³ Villanueva (1966) is an exception, but his research is rarely used.

the official COLI. It also explains the sources and methodology behind the Reconstructed COLI.

3.1. The Bunge COLI

In 1918, the first ever issue of the *Review of Argentine Economics* (*Revista de Economía Argentina*) published a COLI (Bunge 1918). The article had annual COLI figures between 1910 and 1917 that were updated by a year in two subsequent papers (Bunge 1919; Valle and Ferrari 1920). In 1924, the General Bureau of Statistics (*Dirección General de Estadísticas de la Nación*) published the COLI, extending the estimate to 1923 (DGEN 1924). The following update, until 1926, was once again part of the *Review* (Bunge 1928). By 1918 Alejandro E. Bunge was the director of the *Review* and was deeply immersed in the Argentine statistical system. He was then director of the General Bureau after heading the Statistical Division of the DNT between 1913 and 1915. Due to the strong association that existed between Bunge and the index, Lanata-Briones (2021) renames this estimate the Bunge COLI.

The Bunge COLI had three sub-indices: food, rent and other expenditure. The value of the food sub-index was measured using wholesale prices instead of retail because Bunge believed that both sets of prices moved together. The Argentine national statistical system collected retail prices. Specifically, the reports and bulletins produced by the DNT—which Bunge knew very well from his time as head of its Statistics Division—published annual retail prices for the City of Buenos Aires of the food items included in the Bunge COLI (see e.g. *BDNT* 1918; *CMDNT* 1922). Lanata-Briones (2020a, pp. 75-77) compares the DNT retail prices with the wholesale prices used in the Bunge COLI for the most important food items, meat and bread—that accounted for 60 per cent of the food sub-index—and shows that Bunge’s claims were inaccurate. In fact, her comparison shows that retail prices tended to fluctuate more sharply than their wholesale equivalent (see Figures A1 and A2 in the Appendix). The use of retail prices did not reflect the situation of the working class who probably paid for these goods at their retail value. Hence, this problem of the Bunge COLI can be overcome by using retail prices published regularly by the DNT to value the food sub-index. The Reconstructed COLI is elaborated using these retail prices.

The shares of the three sub-indices were estimated based on the working-class household budget surveys of 1913 and 1914 carried out by the DNT that focused on the families of the City of Buenos Aires. In the 1919 update of the COLI, without presenting any evidence, Bunge (1919) explained that in 1918 due to the rising rent prices and fixed wages, families tended to spend a greater share of their wage on rent. For this reason,

Bunge altered the shares of the sub-indices from 50 per cent-20 per cent-30 per cent for food, rent and other expenditure, respectively, to 50 per cent-26 per cent-24 per cent. The estimates released in the subsequent reports have COLIs estimated with the first set of shares until 1918 and then COLIs estimated with the second set of shares for 1919 onwards. In these publications, Bunge explained how he obtained each sub-index and showed the detailed calculations behind each yearly COLI. One can easily corroborate that to generate the index, he simply «combined» the yearly COLIs estimated with the first set of sub-indices with the yearly COLIs estimated with the second set of sub-indices without splicing them. Lanata-Briones (2020a, pp. 79-80) compiles the evidence from working-class household budget surveys carried out by the DNT which updated the 1913 and 1914 enquiries. The department took these surveys throughout the City of Buenos Aires in 1919, 1922-1926, 1928 and 1929. This evidence shows that the shares of food, rent and other expenditure remained stable throughout the 1920s (see Table A2 in the Appendix). Hence, the problem of the lack of an appropriate splice that arises due to the share alteration can be overcome because the household budget evidence suggests that no such change in the spending shares existed among the working-class families of the City of Buenos Aires in the period. The Reconstructed COLI is elaborated without changing the shares of the three sub-indices and, consequently, without splicing different estimates for the 1910s and 1920s.

Bunge never specified which prices were used to estimate the rent sub-index. In the 1918 publication one can see that the values of the rent sub-index are the same as the values of the rent and leases index number Bunge used to estimate the general cost of Argentines' consumption that also includes domestic consumption and imports (Bunge 1918, pp. 61-62). Thus, it can be inferred that the rent sub-index of the Bunge COLI refers to all types of dwellings—rooms in apartments, apartments, houses, land—throughout the country. More appropriate prices are needed given that other data in the Bunge COLI refer to working-class families of the City of Buenos Aires. Using the information published in newspaper ads, the Statistical Institute (*Instituto de Estadística*, IE) of the *Universidad de Córdoba* produced a series for the City of Buenos Aires of the average price of a room, the average price of a room in an apartment and the average price of a room in a house (IE 1944). Lanata-Briones (2020a, pp. 78-79) argues that while the three IE series have relatively similar variations, a comparison between the rent sub-index produced by Bunge and the IE rent price series for the City of Buenos Aires suggests that Bunge's rent sub-index does not reflect the evolution of the rent paid by working-class families of the City of Buenos Aires. Notwithstanding some substantial price rises in 1918 and 1920, Bunge's rent sub-index varied less than the IE price series, which reflected more accurately the rent paid by the working class (see Figure A3 in the Appendix). Hence, a rent price series such as the IE's can be used to

measure the change in the price of accommodation paid by working-class families of the City of Buenos Aires. The Reconstructed COLI is elaborated using the IE rent prices of a room because—according to Bunge, who studied the housing situation of the working class closely (Bunge 1925; Bunge 1940, pp. 373-402)—88 per cent of working-class families rented and lived in a room (Bunge 1919, p. 371).

Given the problems of the Bunge COLI and the sources of data available to Bunge at the time he produced the first estimate of the Argentine COLI, it is possible to reconstruct it using retail prices for food items published by the DNT, not altering the shares of its three sub-indices—keeping the original breakdown of 50 per cent-20 per cent-30 per cent for food, rent and other expenditure, respectively—and using the IE data on the price of a room. Hence, the Bunge COLI can be reconstructed altering the prices used in the food and rent sub-indices, all of which refer to the City of Buenos Aires. The other expenditure sub-index—which Bunge estimated using Argentina's import price index that includes a wide range of goods—was meant to reflect mainly the price of clothing. Lanata-Briones (2021) argues that the use of the import price index reflected Bunge's understanding of Argentina's economic structure as an importer of manufacturing goods. Due to the lack of official clothing consumption and price data it is impossible to alter the other expenditure sub-index. Thus, the reconstruction uses, as does Bunge, the import price index that reflects the prices of Argentina's total imports in its version published in 1948 by the *Dirección Nacional de Investigaciones, Estadística y Censos* (DNIEC 1948), a predecessor of the *Instituto Nacional de Estadísticas y Censos*—Argentina's national statistical agency.

A tension remains in the reconstruction of the Bunge COLI, however, which has its origins in the 1910s. Bunge was aware that the consumption patterns varied throughout the country. However, he claimed that annual price changes were the same throughout the country and thus he argued that his COLI represented price movements for Argentina as a whole. Lanata-Briones (2020a, pp. 77-78) examines price indices of different Argentine cities published by the DNT for 1919 and 1920 and shows that this was not the case, undermining Bunge's claim. In the Reconstructed COLI, for the 1910s and 1920s the food and rent prices as well as the budget structure are elaborated using data from working-class families of the City of Buenos Aires. However, the information behind the other expenditure sub-index is for Argentina as a whole. At the time of writing, this tension cannot be resolved.

3.2. The DNT COLI

From the end of the 1920s, the Statistics Division of the DNT began to realise the potential wages had to absorb local production. A September 1932

Presidential decree argued for the need to know the fluctuations in the purchasing power of workers' wages and established the construction of a COLI for the City of Buenos Aires. The task was assigned to José Francisco Figuerola and the Statistics Division (*BIDNT* 1933). A COLI was released in 1935 (DNT 1935) and updated monthly. Unlike the Bunge COLI, there was no close association between Figuerola and the index. Hence, Lanata-Briones (2021) renamed it the DNT COLI.

The DNT COLI had five sub-indices: food, rent, general expenditure, housing and clothing. It was based on the information obtained from the October 1933 household budget survey of the City of Buenos Aires; specifically, on the information of four budgets belonging to working-class families that lived on m\$120 per month and that were formed by a couple and three children. While the food, rent, general expenditure and housing sub-indices were elaborated using the data collected in the survey, the weight of the clothing sub-index was estimated as a residual between m\$120 and the value of the basket in October 1933 concerning the other sub-indices. Hence, the survey had no data on clothing expenses.

Unlike the Bunge COLI, it is clear what «typical» family the DNT index was meant to represent: a family of five individuals formed by a couple and three children. Was this the average family size at that time in the City of Buenos Aires? Despite the lack of national population censuses between 1914 and 1947, the evidence of the 1936 census of the City of Buenos Aires can be used to ascertain the average family structure. Lanata-Briones (2020b, pp. 84-86) compares the information from the October 1933 budget survey with that of the 1936 census and shows that a household formed by a couple and three children was not the typical family in the early 1930s in the City of Buenos Aires. The average family was, in fact, formed by a couple and two children. This is the case for both the city as a whole (see Table A3 in the Appendix) as well as for working-class neighbourhoods (see Table A4 in the Appendix). Hence, to be representative of the average family of the City of Buenos Aires, the original aim, the Reconstructed COLI is based on the preferences of a family formed by a couple and two children. The detailed information of these budgets is provided in the original release of the DNT COLI (DNT 1935).

Figuerola wanted to base the COLI on the lowest wage earned by workers, which he established as m\$120 per month. However, the DNT did not provide any evidence that this was the case. Information on wages and earnings was not collected in the October 1933 survey. Was this the lowest wage working-class families lived on at that time in the City of Buenos Aires? Based on average hours worked and hourly rates data for 1933 and 1935 and other qualitative sources, Lanata-Briones (2020b, pp. 78-80) shows that the wage assumed as the lowest earned by workers was not the smallest amount perceived by the head of households of these families. The average monthly wage for workers in the early 1930s,

she argues, was closer to m\$n150-m\$n160. Hence, to be representative of the average family of the City of Buenos Aires, in line with its aim, the Reconstructed COLI is not based on the household budget of a working-class family living on m\$n120 per month. The October 1933 survey has household budget information for 46 families formed by a couple and two children that lived on m\$n120-m\$230 per month. All this information—which is published in the original release of the DNT COLI (DNT 1935)—is used to establish the average budget of a working-class family of the City of Buenos Aires.

Given the problems of the DNT COLI and the sources of data available to Figuerola and the DNT at the time it was produced, it is possible to reconstruct the second official estimate of the Argentine COLI altering the household budget survey it was based on. For the 1930s and early 1940s, the Reconstructed COLI considers the consumption preferences of working-class families living on a monthly wage between m\$n120 and m\$n230, formed by a couple and two children. As the clothing sub-index was estimated as a residual and due to the lack of clothing price data, the Reconstructed COLI does not consider this sub-index. This new COLI is comprised of the food, rent, general expenses⁴ and housing⁵ sub-indices. In the reconstruction, the same food, housing and general expenses prices as the DNT are used, which were published regularly by the department. However, some food items considered in the DNT index are excluded in the reconstructions due to lack of price data. The list of food items considered can be found in Table A5 in the Appendix. Although there are no apparent problems with the price data behind the rent sub-index of the DNT COLI, for consistency reasons the reconstruction of the DNT index uses the same price series as the reconstruction of the Bunge COLI. Hence, the IE rent price series for a room that extends until 1943 is used.

4. THE RECONSTRUCTED COLI

The official Argentine COLI used by the historiography to study the interwar period—which is a combination of the Bunge and DNT COLIs—has several oversights. The Reconstructed COLI is a novel index that amends those oversights. For this purpose, the Bunge and DNT COLIs are first re-estimated separately based on the sources and methodology explained in the previous section. The two amended cost-of-living estimates are then spliced to generate the Reconstructed COLI for 1912-1943. The results are displayed in this section and are compared to

⁴ This sub-index accounts for expenditure on newspapers and transport.

⁵ This sub-index accounts for expenditure on coal, kerosene and soap.

the official COLI. The Basic COLI is also estimated and compared to the Reconstructed COLI to show the latter's robustness.

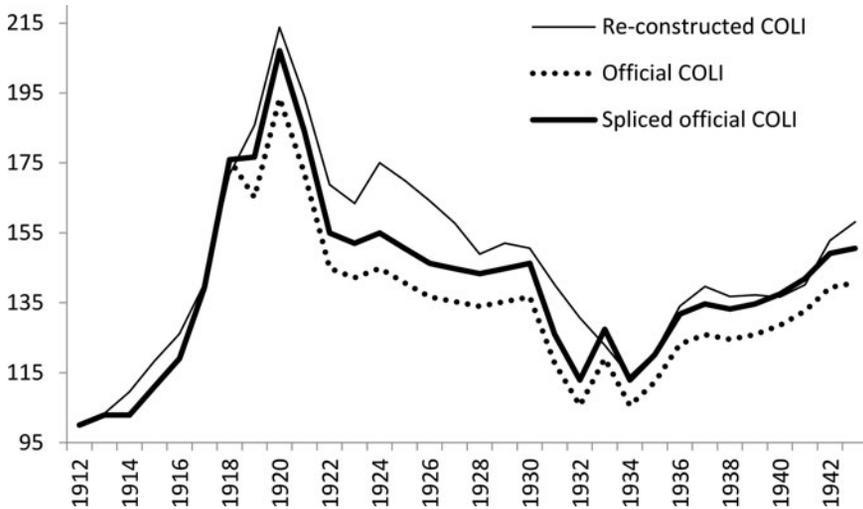
For 1912-1933 the Reconstructed COLI has three sub-indices—food, rent and other expenditure—with weights of 50 per cent-20 per cent-30 per cent, respectively, for the whole period. The food sub-index uses retail prices of the DNT, while the rent sub-index is weighted using the IE price series for the rent of a room. All other information and assumptions are the same as for the Bunge COLI. There is no specification of the characteristics of the household, except that it is a working-class family. For the period 1933-1943 the Reconstructed COLI has four sub-indices—food, rent, general expenses and housing. It considers the consumption preferences of 46 working-class families living on a monthly wage between m\$n120 and m\$n230, formed by a couple and two children. For consistency, the IE rent price series for a room is used to estimate the rent sub-index. All other information and assumptions are the same as for the DNT COLI. The alterations made in the two official estimates contribute towards the generation of a price index that reflects the cost of living of the working class more accurately as well as the aims stated by both Bunge and the DNT.

The great majority of the sources used in the official COLI, either by Bunge or by the DNT, refer to the working class of the City of Buenos Aires. However, in its origins and in the historiography the official COLI has been referred to as the index that portrays the price movements of Argentina as a whole, with little or no emphasis on it being an index that was mainly elaborated using working-class household data of the country's capital city. It was only at the start of the 21st century that Argentina's national statistical office—the *Instituto Nacional de Estadísticas y Censos*—started to produce a consumer price index that reflected the consumption pattern and the prices of the other parts of the country as well. Until then, the headline price index only reflected data of the City of Buenos Aires and its surrounding area or Greater Buenos Aires. Inspired in the sociology of quantification literature, this paper reconstructs the official COLI as authentically as possible using the data available at the time the Bunge and DNT indices were produced. Hence, the Reconstructed COLI reflects to a great extent the consumption patterns and prices of working-class families of the City of Buenos Aires, with the minor caveat of the other expenditure sub-index import price data for the Bunge COLI. Future uses and users of the Reconstructed COLI should be aware of this.

Figure 1 presents the Reconstructed COLI and contrasts it with the official COLI used by the historiography⁶. It also includes the spliced official

⁶ The values of the Reconstructed COLI are presented in Table 6 in the Appendix. Table 7 summarises the sources behind the Reconstructed COLI.

FIGURE 1
RECONSTRUCTED COLI, 1912-1943; BASE: 1912 = 100.

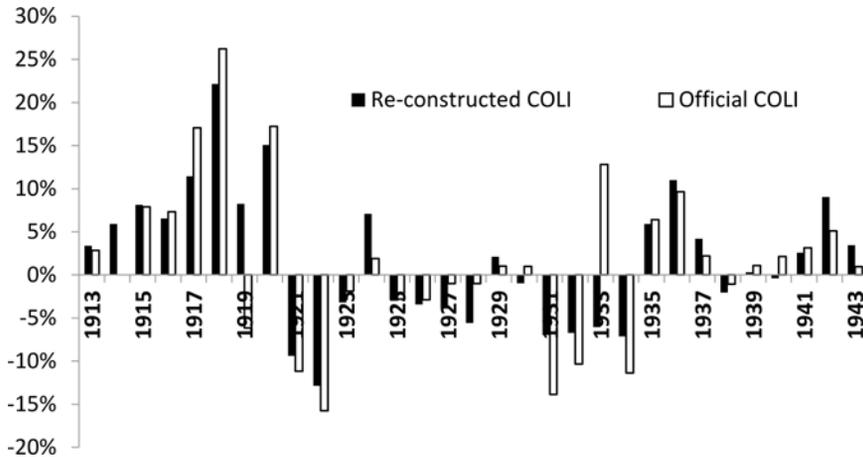


Source: Author's estimates (see Table A7 in the Appendix); Bunge (1919); DGEN (1924); DNEC (1963).

COLI, a variation of the official COLI that splices the Bunge COLI properly when Bunge changed the sub-indices shares from 50 per cent-20 per cent-30 per cent for food, rent and other expenditure, respectively, to 50 per cent-26 per cent-24 per cent. No other changes exist between the official COLI and the spliced official COLI. Hence, the spliced official COLI has the same yearly variations as the official index, except for 1919, and is added to Figure 1 simply to depict the impact of the absence of splicing.

As Figure 1 shows, according to the official COLI used by the historiography, prices rose by 40.8 per cent between 1912 and 1943. In that same period, if that series is spliced correctly, prices increased by 50.6 per cent. This 10-point difference highlights the relevance of appropriate splicing when everything else is held constant. The lack of splicing has been so far unaccounted for in the historiography and in all publications that simply use the primary or secondary sources referenced in Table A1 in the Appendix. The variation in the Reconstructed COLI in that period was 58.1 per cent, substantially above both other COLIs. The Reconstructed COLI improves on most of the oversights of the official COLI, despite its narrower scope in the goods considered (see Table A5 in the Appendix for the list of food items). Except for certain years, the official and Reconstructed COLIs moved in the same direction. However, as Figure 2 shows, the intensity of the fluctuations varied.

FIGURE 2
ANNUAL PERCENTAGE VARIATIONS IN THE RECONSTRUCTED AND OFFICIAL COLIs, 1913-1943.



Source: Author's estimates (see Table A7 in the Appendix); DNEC (1963).

The trajectories of the official and the Reconstructed COLIs are extremely similar until 1919, when Bunge decided to alter the shares of the three sub-indices without the appropriate splice. From then on, a substantial gap opens that never closes, despite the official COLI varying more sharply in several years, as Figure 2 suggests. As expected, the disparity is more noticeable for the period 1912-1932 given the substantial alterations that the Reconstructed COLI experiences *vis-à-vis* the official estimate regarding the price uses in the food sub-index and the weights of the different sub-indices. The values of the Reconstructed COLI are always higher than the official COLI, except for 1918. The gap ranges from its lowest value of 0.52 index points in 1913 and reaches its maximum in 1924 at 30.22 index points.

Figure 2 also shows that both indices tend to vary in the same direction almost every year. The most significant opposite fluctuations occur in 1919 and 1933 and they are related to the way the indices were estimated. In 1919 the official COLI shows a year-on-year decline while the Reconstructed COLI presents an increase. An explanation for this discrepancy can be found in the sixth section of this article and is a political explanation. The other significant opposite variation occurs in 1933. This is the year the change in the methodology from the Bunge to the DNT COLI takes place in both estimates. The 1937 report that first published a series that merged them provides no explanation regarding how the two series behind

the official COLI were combined. The Reconstructed COLI splices the Bunge and DNT estimates from 1933. Given the availability of data, the Bunge COLI is reconstructed until 1933 and from then on, via annual variations of the reconstructed DNT COLI, the series is updated until 1943. The decline in the Reconstructed COLI in 1933, rather than an increase, is in line with the negative annual variations of food prices that began with the Great Depression and that indeed continued until 1934.

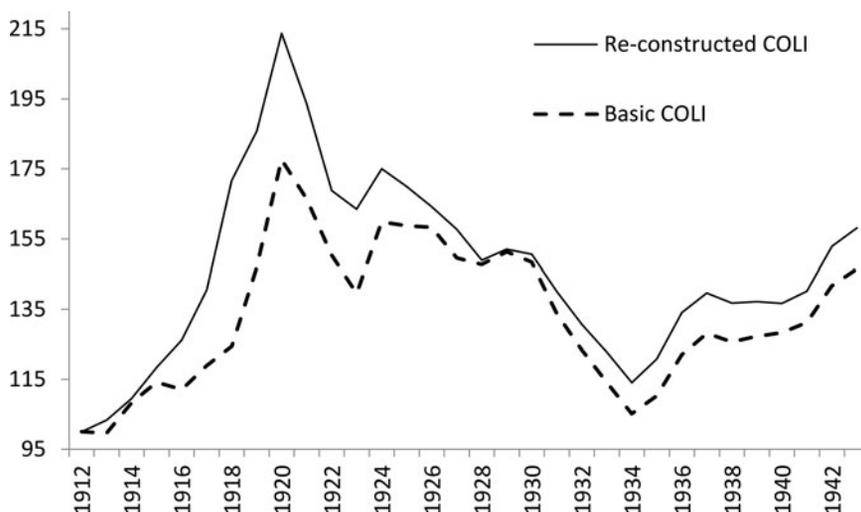
The relevance and reliability of the Reconstructed COLI can be valued further when compared with the Basic COLI as Figure 3 shows⁷. The Basic COLI is estimated using retail prices of fourteen food items⁸, rent, kerosene and charcoal, combining Bunge's methodology without the sub-index share change (1912-1933) and the DNT's methodology using the budgets of the 46 workers' families formed by a couple and two children (1933-1943). The purpose behind the Basic COLI is to ground it on the same basic goods throughout the whole period using the assumptions of the Reconstructed COLI. The sources of food and rent prices of the Basic COLI are the same as those used to estimate the Reconstructed COLI.

As mentioned, the Reconstructed COLI varies 58.1 per cent between 1912 and 1943. The Basic COLI increases by 46.5 per cent, a variation that is still higher than that of the official COLI. Throughout the whole period, the gaps between the Reconstructed and Basic COLIs are closely, although not entirely, related to the items not considered in the basic price index. Between 1912 and 1932 such discrepancies are generally linked to the variations of the other expenditure sub-index, as the majority of the food items in the two indices are the same. The comparison between the two series suggests that throughout part of the First World War food (and rent) prices in Argentina did not rise as sharply. After an increase of 8.8 per cent in 1914, they were relatively less volatile between 1914 and 1918. However, import prices, factored in through the other expenditure sub-index, increased substantially. Prices of food (and rent) jumped considerably once the war ended, as the Basic COLI increased by 18 per cent in 1919 and by 21 per cent in 1920. In both indices, prices rise in 1919, providing more evidence to support the assertion that the decline in the official COLI in that year is linked to the lack of splicing. The closure of the gap between 1924 and 1928 relates to the 28.9 per cent drop in import prices. The decline in the prices of food after the Great Depression is clearly reflected in the Basic COLI. In 1933 the Basic COLI also declines as does the Reconstructed COLI, casting further doubts on the splicing between the Bunge and DNT COLIs in the official price

⁷ The values of the Basic COLI are presented in Table 6 in the Appendix. Table 7 summarises the sources behind the Basic COLI.

⁸ See Table 5 in the Appendix for the list of the food items.

FIGURE 3
RECONSTRUCTED AND BASIC COLIs, 1912-1943; BASE: 1912 = 100.



Source: Author's estimates (see Table A7 in the Appendix).

index. From 1933 to 1943, the two series of Figure 3 have similar trends, with very small differences in their fluctuations that relate mainly to the food items not considered in the Basic COLI, as well as soap, newspaper and transport.

The discrepancies between the COLIs presented in this section result from several causes: types of prices—retail vs. wholesale, as well as rent for the City of Buenos Aires vs. the whole country—, family structure, the differential impact of the sub-index shares and the methodology used for splicing different series. These different assumptions and data show how the decisions of individuals influence estimates. Compared with the Basic COLI, the Reconstructed COLI includes a greater amount of prices and reflects the indices constructed by Bunge and the DNT more accurately, and hence the official COLI used by the historiography, while correcting most of the series' oversights, even if the official estimates are not totally reproduced due to the lack of information.

5. HOW THE RECONSTRUCTED COLI TRANSLATES INTO REAL WAGES DURING THE INTERWAR YEARS

The Reconstructed COLI allows for the re-evaluation of real wages during the interwar period. While the historiography on Argentina agrees that

1975 is a year of relative and absolute divergence, a turning point in the country's economic history, other relative shifts are identified in either 1913, 1930 and/or 1945 (Sánchez 2018). Hence, despite relatively low levels of price increases *vis-à-vis* other periods, the interwar years are a fundamental period in Argentine history. After describing the characteristics of this historical period, this section examines the trajectory of real wages using the Reconstructed COLI.

5.1. Argentina during the Interwar Years

After decades of extreme economic openness, under three successive Radical Civic Union party (*Unión Cívica Radical*, UCR) governments (1916-1930) the closure of international markets during the First World War and the change in the international rules of trade enhanced the existent incipient industrialisation. However, the export-led growth model in Argentina continued until the Great Depression, when exports were significantly affected (Bulmer-Thomas 2003; Gerchunoff and Llach 2007). There is a consensus that industrialisation started to be fostered actively by the state in the 1930s and particularly when Juan Domingo Perón became president. However, there is relatively less research and agreement within the historiography regarding what occurred between the First World War and the Great Depression, also contributing to the relevance of the interwar period.

Kuntz-Ficker and Rayes (2017) demonstrate that the contribution of exports to GDP grew from modest to considerable between 1890 and 1918, meaning that throughout this period exports fostered the growth of the Argentine economy. They suggest that export expansion did not exclude industrialisation since other activities took over the growth process after 1920. Argentina took advantage of a multilateral and open economic system because, for Pinilla and Rayes (2019), agro-export performance until the Great Depression is explained by the diversified basket of products that Argentina supplied to a wide range of markets. However, the changes brought about by the Great War were not completely internalised by the ruling class, who still believed that the economy should function following the same premises that had guided it before the conflict. While research on Argentina's political history argues that in the early 20th century the landowning ruling elite understood that industrial interests were complementary to agrarian expansion (Hora 2000), the incipient industrialisation of the late 1910s and 1920s is seen by some authors as a period of great delay and missed opportunity (Di Tella and Zymelman 1967). In those years a new agrarian expansion was accompanied by industrial growth. The expansion was based mainly on the incorporation of technology to agriculture and on the extension of the agricultural frontier,

although at a much slower pace than before. Once the Great War was over and the international food market «normalised», the rise in the share of Argentine food exports in international markets encouraged the view among the ruling elite that the country should continue on the export-led path to growth (Gerchunoff 2016). Hence, for Gerchunoff, the years under UCR rule were not a transition, but a unique period in themselves. Within a flexible labour market (Beccaria 2006), in the 1910s and 1920s the middle class increased in size, as did the working class, although to a lesser extent.

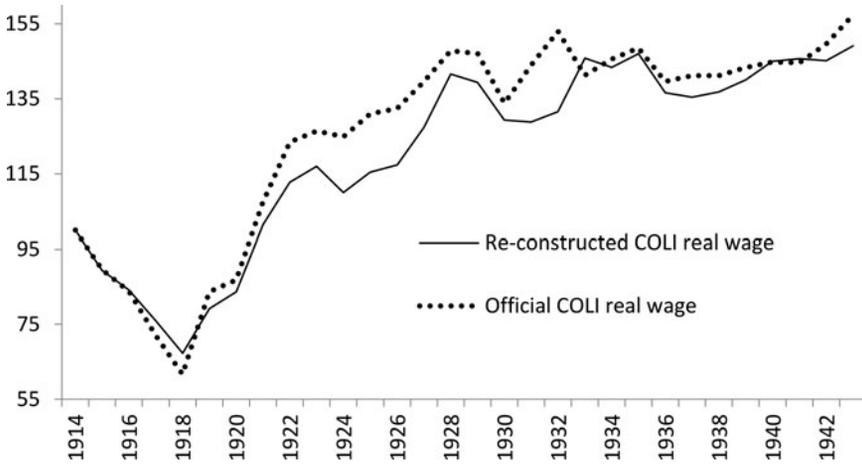
In 1930, a *coup d'état* toppled UCR President Hipólito Yrigoyen and the infamous decade began. It lasted until 1943 and was characterised, among other things, by electoral fraud. Throughout this decade, labour-intensive manufacturing increased substantially as a share of GDP encouraged by a succession of protectionist policies—such as exchange controls—within a relatively closed economy. Manufacturing output was geared towards the domestic market. In these years, because of increasing urbanisation and industrialisation, the working class expanded, and the state became more active in distributive matters, particularly in the regulation of capital–labour relationships, favouring (manufacturing) trade unions. Hence, the labour market institutionalised and became more rigid, accentuating the process that had already begun in previous years.

5.2. Real Wages in the Interwar Years

To be consistent with the Reconstructed COLI, the nominal wage series is extracted from a publication of the successor of the Statistical Division of the DNT, the Bureau of Social Statistics (*Dirección de Estadística Social*) of the Labour and Social Welfare Secretariat (*Secretaría de Trabajo y Previsión*). In its annual report, the Bureau published a weekly nominal wage index series for the City of Buenos Aires for 1914–1945 (DES 1946, p. 258). The publication does not provide any other information on the series. Hence, it is assumed that it reflects an average weekly nominal wage for the City of Buenos Aires, aligning with the geographical scope of the Reconstructed COLI. The wage series is not analysed in detail like the official COLI because the aim of this article is to present a new cost-of-living estimate and examine a historical implication of the new index. In that regard, the wage series of the Bureau of Social Statistics used here differs from the recent efforts taken to elaborate wage series for the interwar period (Vence Conti and Cuesta 2014; Newland and Cuesta 2017). The real wage indices presented in Figures 4 and 5 are constructed using the same nominal wage index.

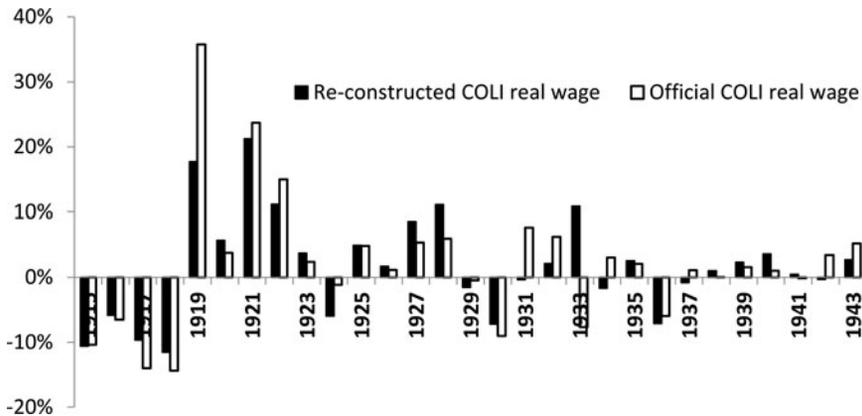
The official COLI real wage increased by 57.4 per cent between 1914 and 1943. Using the Reconstructed COLI, the real wage rose by

FIGURE 4
 REAL WAGE INDICES FOR THE CITY OF BUENOS AIRES, 1914-1943; BASE: 1914 = 100.



Source: Author's estimates (see Table A7 in the Appendix); DES (1946).

FIGURE 5
 ANNUAL PERCENTAGE VARIATIONS OF THE REAL WAGE FOR THE CITY OF BUENOS AIRES, 1915-1943.



Source: Author's estimates (see Table A7 in the Appendix); DES (1946).

49.1 per cent. Annual variations are particularly strong in several years until 1930, while the 1930s tend to exhibit smoother fluctuations. An implication behind the real wage estimates is that when Perón became the head

of the DNT in March 1943 and head of the Labour Secretariat in November that year—all else being equal—workers of the City of Buenos Aires were worse off economically than the historiography assumes. This is a relevant claim given the close relationship that existed between Perón and the working class from 1943 that eventually made him Argentina's president for two consecutive mandates between 1946 and 1955. Perón's administration focused, among other things, on enhancing the purchasing power in the domestic market and on the redistribution of income. His governments always had substantial support from the working class. This finding is also relevant as the legacy of Perón and Peronism throughout the 20th century was and remains today part of Argentina's economic, political and social debate. Moreover, the reconstructed real wage tends to present lower values than the official COLI real wage through most of the interwar period, while the Reconstructed COLI real wage generally varies less than the official COLI real wage. Hence, any literature that examines the material living conditions of working-class families, particularly of the City of Buenos Aires, in this period should be re-evaluated in the light of these findings.

The deterioration of the purchasing power of wages that began with the First World War is sharp and continues until 1920. This is linked to the closure of the international markets that impacted both import prices and those of domestic food items. It is also a consequence of the limited labour legislation that existed at the time, which Yrigoyen—the first UCR president—tried to modify when he took office in 1916. Albeit with different intensities, both real wage estimates of Figure 4 begin to increase from 1918; yet only in 1921 do real wages regain the value of 1914. As Gerchunoff (2016) explains, throughout his first presidency (1916-1922) Yrigoyen aimed to redistribute income through export taxes with the objective to stop the rise in the price of food, and with the enactment of the 1921 rent law that froze rent increases for 2 years. The higher variations in 1921 and 1922 of the official COLI real wage *vis-à-vis* the reconstructed one supports Gerchunoff's analysis as in the Reconstructed COLI the rent sub-index has a lower incidence because the sub-indices shares are not altered.

Real wages continued to rise throughout the 1920s and until the Great Depression, although with different magnitudes, supporting Gerchunoff's (2016) idea that during the UCR governments there was significant income distribution parallel to the changes in the economic and employment structure. Real wages were up by 139 per cent in 1929 when compared to their lowest value in 1918 using the official COLI and by 107 per cent when considering the Reconstructed COLI. Following Gerchunoff (2016), these trends relate to the rise in labour demand due to economic growth and the increase in activities that paid better wages. These jobs were linked to construction, commerce and industry, activities that were

mainly based in the City of Buenos Aires at the time. Specifically, Gerchunoff highlights the substantial improvement in income distribution in the period 1922-1928 as a consequence of these events and the rise in real wages. This improvement seems even more significant when considering the Reconstructed COLI real wage, which rose 25.5 per cent in this period, *vis-à-vis* the official COLI real wage that increased 19.7 per cent.

The year 1930 initiates a period of rising institutionalisation within the labour market, deepening the trend that began with the UCR governments. Trade unions grew in number and membership, particularly within the manufacturing sector, and the state increased its presence as mediator of industrial relations. Until 1943-1945, while rising industrialisation and limits to immigration favoured the workers' position, the Great Depression and its aftermath coupled with different national administrations that did not pursue protectionist measures to favour workers held back any substantial gains for them (Gerchunoff and de Leon 2018). Between 1930 and 1943, for example, real wages increased 18 per cent when estimated using the official COLI and 15 per cent when considering the Reconstructed COLI. Given the changes in the Reconstructed COLI, there are fewer discrepancies in the two real wage estimates in this later period, particularly after 1933. It is worth acknowledging, however, that the big jump in the Reconstructed COLI in 1943 seen in Figure 1 resulted from the 6.4 per cent rise in rent. According to the DNT, that year rents decreased by 4.9 per cent, following the new rent control mechanism put in place by the government. Given the lower rise in the Reconstructed COLI real wage—which considers the rent prices actually paid by workers as advertised in newspaper ads—either that control mechanism was not effective or its effects impacted the 1944 rent prices.

The real wage series estimated with the Reconstructed COLI, while showing a similar trajectory to the real wage estimated with the official COLI, tend to be less pronounced, particularly during the 1910s and 1920s. Moreover, there is a difference of almost 10 percentage points between the official COLI real wage and the Reconstructed COLI real wage when considering the increase throughout the period 1914-1943.

6. POLITICS OF NUMBERS

Sociology of quantification explores the political motivation behind the elaboration of statistics. This section examines political drivers behind the lack of splicing of the Bunge COLI in 1919.

Argentina experienced price rises during the First World War and until 1921 that affected the living conditions of the population, especially in the cities. This impacted real wages negatively—which is observed using both the official and Reconstructed COLIs of Figures 4 and 5—and triggered a series of strikes (Rock 2009, p. 106). At the time, most Argentines had a

rudimentary notion about the increase in the cost of living, but the COLI contributed towards measuring and perceiving such magnitudes.

A succession of strikes demanding fewer working hours as well as pay rises occurred in the Vasena metal works in the City of Buenos Aires towards the end of 1918. The protest continued until 7 January, when the police intervened, and five workers were killed. A new clash between the workers and the police, followed by more deaths, occurred on the premises of the cemetery as the workers were buried. This led to a general strike after which the government conceded to the workers' demands. This is known as the *Semana Trágica* (Tragic week) (Bilsky 1984). After the *Semana Trágica*, the efficiency of Yrigoyen's interventions to deal with labour conflicts declined. In 1921, he abandoned that strategy, an attitude that his successor Marcelo T. de Alvear (1922-1928) maintained (Horowitz 1995; Garguin 2000, pp. 103-106).

A striking feature of Figures 1 and 2 is the divergent performance in 1919 of the Reconstructed COLI *vis-à-vis* the official version. That year, the Reconstructed COLI rises 8.2 per cent, while the official price index declines 6.2 per cent and the spliced official COLI rises 0.4 per cent. As examined, this conflicting behaviour relates to the deficient splicing in the case of the official index. The inadequate splicing was not due to Bunge's lack of knowledge (Lanata-Briones 2020a, 2021). During his engineering studies in Germany, Bunge learned about the German Historical School (Lucchini *et al.* 2000), a discipline strongly based on the use of statistics. Not only did Bunge introduce index numbers into the Argentine statistical system (Lanata-Briones and Daniel, forthcoming), but he was also well aware of several statistical works on index numbers and COLIs, such as Irving Fisher's *The Making of Index Numbers* and Arthur Bowley's *Elements of Statistics*. Eventually, in 1940 Bunge became one of the founding members of the Inter-American Statistical Institute. Moreover, Bunge was associated with conservative politics and economic heterodoxy while being considered part of the ruling establishment (González Bollo 2012; Lanata-Briones 2021). Although never a full supporter of the UCR governments⁹, in the early 1920s Bunge and his statistical tools—particularly his foreign trade index numbers—were widely used and disseminated. He was then director of the General Bureau of Statistics. Hence, the lack of splicing can be linked to the social uprisings and labour-related conflicts triggered by the *Semana Trágica*, its repercussions¹⁰ and the similar events that took place across the

⁹ With Yrigoyen's re-election in 1928 Bunge became extremely critical of the government (Pantaleón 2009).

¹⁰ For example, the *Liga Patriótica* (Patriotic League)—a paramilitary organisation that grouped reactionary sectors of Argentine society—emerged after the events of the *Semana Trágica* (Rock 1997).

country¹¹, events that signal the weakness of Yrigoyen's government. In January 1919, the Socialist newspaper *La Vanguardia* accused the UCR government of electoral manoeuvres in the City of Buenos Aires related to the change in the price of bread (*La Vanguardia* 1919a). In August of that year, the same newspaper argued that «the bread at 40 cents (...) when other consumer items are through the roof (...) is an intolerable scandal, a true attack on the health of the working class» (*La Vanguardia* 1919b, p. 1, author's translation). In June 1920, *La Vanguardia* argued that government claims of sleepless nights in its fight against the high cost of living were a «farce» (*La Vanguardia* 1920, p. 1, author's translation). Less pronounced or opposite variations in the COLI when there is substantial social conflict as well as scepticism about numbers would alter the meaning of these events.

7. FINAL REMARKS

Statistics are conceived as straightforward, apolitical facts that reflect and establish reality. Platt argues that statistics should be questioned, while sociology of quantification demonstrates that statistics are neither objective nor neutral. Statistics—like economic knowledge—are dynamic constructions that adapt to the context in which they are produced. Previous research carefully examines the process behind the elaboration of the first two estimates of the Argentine COLI. Building on those findings, this paper generates the Reconstructed COLI for 1912-1943 that amends the oversights of the two estimates and uses it to produce a real wage series.

By providing a new estimate of the political statistic that addresses a longstanding macroeconomic problem, this paper enhances the Argentine historiography of the interwar period, which has systematically used the official COLI without questioning it. The lack of an appropriate splice is at the core of the divergence between the official and the Reconstructed COLIs. The inappropriate splicing carried out by Bunge in the late 1910s implies a divergence of almost 10 percentage points for the period 1912-1943 between the series used by the historiography and a COLI that is the same as the official COLI but appropriately spliced. A 17.3 percentage-point gap for the period 1912-1943 exists between the official series used by the historiography and the Reconstructed COLI. This divergence is also evidenced, as expected, when estimating real wages. In Platt's words, «the thoughts and mistakes of one generation lead too easily to the conclusions of another» (1989, p. ix).

¹¹ The strikes that took place in the province of Santa Cruz between 1920 and 1922, known as the *Patagonia rebelde*, are the most relevant (Bayer 1974).

The nominal wage series used in this paper was not analysed in detail as the official COLI because the objective of this research is to present a new cost-of-living estimate and examine an implication of the new index. A more accurate denominator deserves a suitable numerator, which should be examined and, if necessary, reconstructed following a similar detailed analysis. Hence, further research, such as that produced by Newland and Cuesta (2017) and Vence Conti and Cuesta (2014) would enhance the real wage estimates of this paper.

The Reconstructed COLI is a clear example of how different assumptions—regarding the types of prices used, the alteration in the shares of the sub-indices, and the type of household chosen as representative of the population with its corresponding expenditure structure—generate different results, which implies that it is crucial to understand the assumptions behind the construction of price indices. An implication behind the real wage estimates is that when Perón arrived at the DNT in 1943, all else being equal, workers of the City of Buenos Aires were worse off economically than the literature assumes. The behaviour of the official COLI real wage supports the optimism of those who claim that during the UCR governments of the 1920s there were substantial increases in prosperity. The Reconstructed COLI real wage of this paper, however, provides a more nuanced picture of such prosperity.

ACKNOWLEDGEMENTS

Received 06 April 2021. Accepted 02 February 2022.

I thank Paulo Drinot, Joe Francis, Alejandra Irigoin, Colin M. Lewis, Chris Minns, Ricardo Salvatore and three anonymous referees for their valuable comments and suggestions.

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APPENDIX

TABLE A1
DIFFERENT WORKS ON THE ARGENTINE AND THE SOURCE OF THE COST OF LIVING ESTIMATES THEY USE¹

Works	Source of the COLI											
	Primary (P)				Secondary (S)							
	REA/ Bunge	IS/ DNT	DNEC	Villanueva	Anuario Geográfico Argentino	della Paolera and Ortiz	Díaz Alejandro, «Tipo de cambio»	Gerchunoff and Llach	IERAL	Véganzonès and Winograd	Williamson	Williamson and Taylor
Cortés Conde, <i>El progreso</i>	P	P										
Cuesta, «Un acercamiento»		P	P									
Di Tella and Zymelman, <i>Las etapas</i>	P	P										
Díaz Alejandro, <i>Ensayos</i>			P									
Gaudio and Pilone, «El desarrollo»		P										
Germani, <i>Estructura</i>		P										
Harriague, and Rayes, «Fuentes»	P	P	P	P								
Horowitz, <i>Argentine Unions</i>		P										
Iñigo Carrera, <i>La formación</i>	P	P										

TABLE A1
 DIFFERENT WORKS ON THE ARGENTINE AND THE SOURCE OF THE COST OF LIVING ESTIMATES THEY USE¹
 (Cont.)

Works	Source of the COLI											
	Primary (P)				Secondary (S)							
	REA/ Bunge	IS/ DNT	DNEC	Villanueva	Anuario Geográfico Argentino	della Paolera and Ortiz	Díaz Alejandro, «Tipo de cambio»	Gerchunoff and Llach	IERAL	Véganzonès and Winograd	Williamson	Williamson and Taylor
Murmis y Portantiero, <i>Estudios</i>		P										
Newland and Cuesta, «Peronismo»			P									
Vázquez Presedo, <i>Estadísticas</i>			P									
<i>Anuario Geográfico Argentino</i>		P										
Díaz Alejandro, «Tipo de cambio»			P									
Villanueva, <i>The Inflationary Process</i>			P	P								
Williamson, «The Evolution»	P	P										
della Paolera y Ortiz, «Dinero»	P					S						

TABLE A1
 DIFFERENT WORKS ON THE ARGENTINE AND THE SOURCE OF THE COST OF LIVING ESTIMATES THEY USE¹
 (Cont.)

Works	Source of the COLI											
	Primary (P)				Secondary (S)							
	REA/ Bunge	IS/ DNT	DNEC	Villanueva	Anuario Geográfico Argentino	della Paolera and Ortiz	Díaz Alejandro, «Tipo de cambio»	Gerchunoff and Llach	IERAL	Véganzonès and Winograd	Williamson	Williamson and Taylor
IERAL, «Estadísticas»							S					
Gerchunoff y Llach, <i>El ciclo</i>						S						
Véganzonès and Winograd, <i>Argentina in the 20th Century</i>									S			
Williamson and Taylor, «Convergence»											S	
Cortés Conde, <i>The Political Economy</i>					S				S			
Ferreres, <i>Dos Siglos</i>					S							
Vence Conti and Cuesta, «Políticas laborales»	P	P	P		S							
della Paolera, Irigoin and Bozzoli, «Passing the buck»						S						

TABLE A1
 DIFFERENT WORKS ON THE ARGENTINE AND THE SOURCE OF THE COST OF LIVING ESTIMATES THEY USE¹
 (Cont.)

Works	Source of the COLI											
	Primary (P)				Secondary (S)							
	REA/ Bunge	IS/ DNT	DNEC	Villanueva	Anuario Geográfico Argentino	della Paolera and Ortíz	Díaz Alejandro, «Tipo de cambio»	Gerchunoff and Llach	IERAL	Végonzonès and Winograd	Williamson	Williamson and Taylor
della Paolera y Taylor, <i>Straining at the Anchor</i>						S						
Sturzenegger and Moya, «Economic cycles»							S					
della Paolera, Taylor and Bozzoli, «Historical statistics»								S				
Vitelli, <i>Los dos siglos</i>								S				
Galiani and Gerchunoff, «The labour market»									S			

TABLE A1
DIFFERENT WORKS ON THE ARGENTINE AND THE SOURCE OF THE COST OF LIVING ESTIMATES THEY USE¹
(Cont.)

Works	Source of the COLI											
	Primary (P)				Secondary (S)							
	REA/ Bunge	IS/ DNT	DNEC	Villanueva	Anuario Geográfico Argentino	della Paolera and Ortiz	Díaz Alejandro, «Tipo de cambio»	Gerchunoff and Llach	IERAL	Véganzonès and Winograd	Williamson	Williamson and Taylor
Gerchunoff and Aguirre, «La economía» Salvatore, «Better-off»		P								S		S

Notes: DNEC: National Bureau of Statistics and Censuses (Dirección Nacional de Estadísticas y Censos), DNT: National Labour Department (Departamento Nacional de Trabajo), IS: Social Investigations (Investigaciones Sociales), REA: Review of Argentine Economics (Revista de Economía Argentina).

Source: Author's elaboration.

¹The selection criteria of the works in the table are that the piece must have a COLI or, alternatively, a real wage estimate with a specification of the source of the price deflator, for a significant part of the period considered in this research. The list is not comprehensive, merely illustrative.

TABLE A2
EXPENDITURE STRUCTURE OF WORKING-CLASS FAMILY BUDGETS OF THE CITY OF BUENOS AIRES, 1913-1929

	1913 (%)	1914 (%)	1919 (%)	1922 (%)	1923 (%)	1924 (%)	1925 (%)	1926 (%)	1928 (%)	1929 (%)	Average 1913-1923 (%)	Average 1913-1929 (%)
Food	47.9	46.1	59.6	55.0	53.0	55.0	55.0	48.0	51.5	51.0	52.3	52.2
Rent	20.0	20.3	17.8	18.0	17.0	18.0	18.0	22.0	22.5	20.0	18.6	19.4
Other expenditure	32.1	33.6	22.6	27.0	30.0	27.0	27.0	30.0	26.0	29.0	29.1	28.4

Source: Lanata-Briones (2020a, p. 79).

TABLE A3
FAMILY STRUCTURES IN THE CITY OF BUENOS AIRES, 1936

Number of people in the family	Number of families	Share of families (%)
2	79,760	24.2
3	85,570	25.9
4	73,908	22.4
5	42,785	13.0
6	23,252	7.0
7	12,286	3.7
8	6,479	2.0
9	3,281	1.0
10	1,572	0.5
11	721	0.2
12	289	0.1
13	110	0.0
14	37	0.0
15	14	0.0
16	1	0.0
18	1	0.0

Source: Lanata-Briones (2020a, p. 84).

TABLE A4
 FAMILY STRUCTURES IN DIFFERENT NEIGHBOURHOODS OF THE CITY OF BUENOS AIRES, 1936

	City of Buenos Aires	Working class neighbourhoods¹	Neighbourhood 1	Neighbourhood 2	Neighbourhood 3	Neighbourhood 4	Neighbourhood 15	Neighbourhood 20²
Total ³	3.9	4	4.3	3.7	3.6	3.5	4.1	3.9
Comparable structures ⁴	3.8	4	4.2	3.9	3.7	3.9	4	3.2
Other structures ⁵	4	4.2	4.4	4.1	3.9	4.1	4.2	3.3

Source: Lanata-Briones (2020b, p. 85).

¹Average of neighbourhoods 1, 2, 3, 4 and 15.

²Considered by Germani as mainly inhabited by upper-class families.

³Includes all types of households.

⁴Refers to the same family structures surveyed in October 1933.

⁵Considers the comparable structures and others that include other family members such as grandparents, grandchildren, etc.

TABLE A5
FOOD ITEMS CONSIDERED IN THE DIFFERENT COLIs

1918 Review of Argentine Economics	1924 General Bureau of Statistics	1935 DNT	Reconstructed Bunge COLI (1912-1933)	Reconstructed DNT COLI (1933-1943)	Basic COLI
Bread	Bread	Bread	Bread	Bread	Bread
Coffee	Butter	Canned goods	Butter	Canned goods	Cheese
Fat	Cheese	Cheese	Cheese	Cheese	Coffee
Flour	Coffee	Cigarettes	Coffee	Coffee	Eggs
Meat	Eggs	Coffee	Eggs	Eggs	Flour
Milk	Fat	Eggs	Fat	Fish	Meat
Oil	Fish	Fish	Flour	Flour	Milk
Potatoes	Flour	Flour	Meat	Legumes	Oil
Rice	Meat	Fruit	Milk	Meat	Pasta
Sugar	Milk	Legumes	Oil	Milk	Potatoes
Tea	Oil	Meat	Potatoes	Oil	Rice
Tobacco	Potatoes	Milk	Rice	Pasta	Sugar
Wine	Rice	Oil	Sugar	Potatoes	Wine
<i>Yerba</i>	Sugar	Other goods	Wine	Rice	<i>Yerba</i>
	Tea	Pasta	<i>Yerba</i>	Soda water	
	Tobacco	Potatoes		Sugar	
	Wine	Rice		Wine	
	<i>Yerba</i>			<i>Yerba</i>	

TABLE A5
FOOD ITEMS CONSIDERED IN THE DIFFERENT COLIs
(Cont.)

1918 Review of Argentine Economics	1924 General Bureau of Statistics	1935 DNT	Reconstructed Bunge COLI (1912-1933)	Reconstructed DNT COLI (1933-1943)	Basic COLI
		Soda water Sugar Vegetables Wine <i>Yerba</i>			

Source: Author's elaboration based on author's estimates; Bunge (1919, pp. 45-51); DGEN (1924, pp. 12-19); DNT (1935, p. 22).

TABLE A6
RECONSTRUCTED AND BASIC COLIs, 1912-1943

	Reconstructed COLI	Basic COLI
1912	100.00	100.00
1913	103.37	99.57
1914	109.49	108.31
1915	118.38	114.19
1916	126.13	112.04
1917	140.56	118.90
1918	171.68	124.44
1919	185.80	146.83
1920	213.78	177.65
1921	193.74	166.34
1922	168.82	150.40
1923	163.45	139.55
1924	175.03	159.77
1925	169.98	158.70
1926	164.16	158.33
1927	157.74	149.52
1928	148.94	147.70
1929	152.05	151.31
1930	150.57	148.36
1931	140.11	133.82
1932	130.70	123.45
1933	122.81	114.07
1934	114.05	105.18
1935	120.77	110.29
1936	134.04	121.96
1937	139.64	128.11
1938	136.77	125.71
1939	137.20	127.29
1940	136.66	128.34
1941	140.17	131.29
1942	152.83	141.72
1943	158.09	146.53

Source: Author's elaboration.

TABLE A7
SOURCES OF THE RECONSTRUCTED COLI

	Price of the food sub-index	Price of the rent sub-index	Price of the other expenditure sub-index	Prices of the general expenditure sub-index	Price of the housing sub-index
1912-1933	DNT publications	IE (1944)	DNIEC (1948)	n/a	n/a
1933-1943	DNT publications	IE (1944)	n/a	DNT publications	DNT publications
Basic COLI	DNT publications	IE (1944)	n/a	n/a	n/a

Source: Author's elaboration.

FIGURE A1
ANNUAL PERCENTAGE CHANGE IN THE PRICE OF MEAT, 1911-1920.



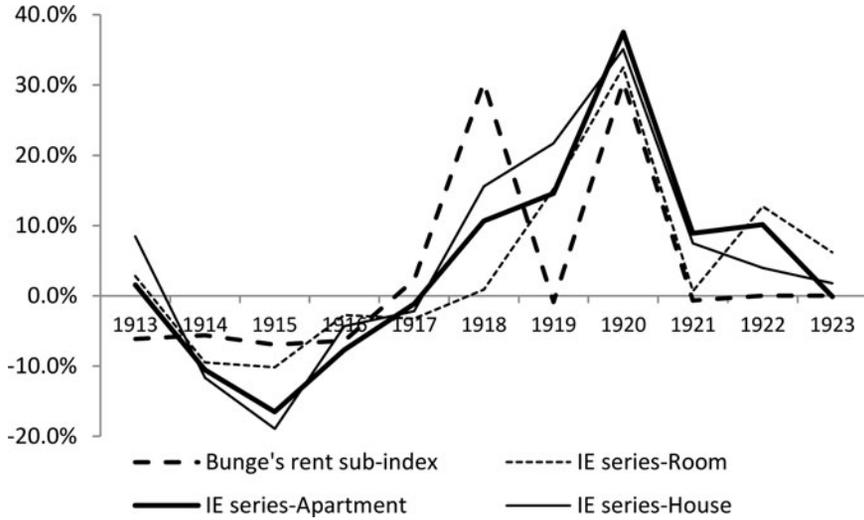
Source: Lanata-Briones (2020a, p. 76).

FIGURE A2
ANNUAL PERCENTAGE CHANGE IN THE PRICE OF BREAD, 1911-1920.



Source: Lanata-Briones (2020a, p. 76).

FIGURE A3
ANNUAL PERCENTAGE CHANGE IN DIFFERENT RENT PRICE SERIES, 1911-1923.



Source: Lanata-Briones (2020a, p. 79).