

How Economists Ignored the Spanish Flu Pandemic in 1918–1920

MAURO BOIANOVSKY

Universidade de Brasilia

GUIDO ERREYGERS

University of Antwerp and University of Melbourne

Abstract: The current Covid-19 pandemic has attracted significant attention from epidemiologists and economists alike. This differs from the 1918–1920 Spanish influenza pandemic, when academic economists hardly paid attention to its economic features, despite its very high death toll. We examine the reasons for that by contrasting the ways epidemiologists and economists reacted to the Spanish flu at the time and shortly after the pandemic. We also explore, but less extensively, some economic and epidemiologic writings during the twenty-five years that followed.

Keywords: Spanish influenza, economists, business cycles, epidemiologists, labour supply

JEL Classification: B19, B49, I19

I. INTRODUCTION

The Covid-19 pandemic is not only a severe health crisis—as of March 2021, at least 100 million cases have been recorded and more than 2.5 million people have died globally, according to the data of Johns Hopkins University (2021)—but it is also a major economic shock. The World Bank estimates that the world economy has shrunk by 4.3% in 2020,

AUTHORS' NOTE: We thank Rogério Arthmar, Edmar Bacha, Ana Maria Bianchi, Christian Bidard, Robert Dimand, Bruna Ingrao, Roselinde Kessels, Jeroen Luyten, Denis Melnik, Cosimo Perrotta, Laurence Roope, Bertram Schefold, Keanu Telles, Estrella Trincado Aznar, Walter Van Trier, Flavio Versiani, and Sunčica Vujić for their suggestions and comments on the first draft of the paper. We are also grateful to Kristine Smets and Clare Booth for their help in getting access to documents, and to the participants of a research seminar at the University of Antwerp for raising several interesting questions. The observations of the reviewer and editors of the journal have been extremely helpful. The usual caveats apply. Mauro Boianovsky gratefully acknowledges research funding from CNPq (Brazilian Research Council).

while government debt levels have increased sharply, and extreme poverty is on the rise again (World Bank 2021).

The scientific community has reacted by investing massively in Covid-19 related research. Several vaccines have been developed and approved in record times, and many more are in the pipeline. Epidemiologists have become media stars in many countries, instructing us to practice social distancing and to wear facemasks, and informing us about the meaning of the R_0 statistic and herd immunity. As soon as it was clear that the coronavirus epidemic had turned into a pandemic and one country after another went into some form of lockdown, economists began examining what would be the immediate and long-term effects of the pandemic. An impressive and fast increasing flow of papers has been the result; in the US, for instance, the National Bureau of Economic Research (NBER) has published more than 350 pandemic-related working papers, and in Europe, the Centre for Economic Policy Research (CEPR) has created the journal *Covid Economics: Vetted and Real-Time Papers* in order to rapidly disseminate the results of Covid-19 related economic research (see Coyle 2020).

One way to get a better understanding of the effects of the current pandemic is to look at previous epidemics, and this is what epidemiologists as well as economists have done. The devastating influenza pandemic of 1918–1920 has been a focal point of attention for both. Economic historians have studied the Spanish flu (also called the Great Influenza Pandemic) since the 1990s; what is different is that macroeconomists are now turning to the data of that period to learn the dynamics of an epidemic and to assess the effects of public health interventions (for example, Correia, Luck, and Verner 2020). There seems to be growing awareness that epidemiologists and economists will mutually benefit from enhanced exchange and cooperation, as illustrated by the contributions to the recent symposium on “Economics and Epidemiology” in the *Journal of Economic Perspectives* (Avery et al. 2020; Murray 2020).

In this paper, we also focus on the Spanish flu pandemic of 1918–1920, but with a somewhat different perspective. Our aim is to explore how economists at the time reacted to the pandemic. In view of the prompt and massive reaction of economists today, our expectation was that something similar must have happened a century ago. As a matter of fact, the Spanish flu pandemic was much more severe than the coronavirus pandemic in terms of its mortality rate (so far), and therefore the economic shock must have been significant. To our surprise, this

was not the case: it turns out that economists neither paid much attention to the economic effects of the pandemic as it developed, nor discussed it retrospectively in any detail in the following decades. Indeed, the Spanish flu has been regarded as the “forgotten pandemic”, since the only people who studied it at the time and afterwards were actuaries (employed by insurance companies), epidemiologists, and medical historians (see Crosby [1989] 2003; Spinney 2017). We examine the reasons for that by contrasting the ways epidemiologists and economists reacted to the Spanish flu at the time and shortly after the pandemic. We also explore, but less extensively, some economic and epidemiologic writings during the twenty-five years that followed. Our main goal is to highlight the silence of economists regarding the Spanish flu; additionally, we speculate about possible causes for this neglect.

II. A FEW FACTS ABOUT THE SPANISH FLU PANDEMIC

Medical data about the 1918–1920 influenza pandemic are not precise, but it is beyond doubt that it was one of the deadliest pandemics ever. It spread in three waves: in March 1918, the first wave begun in Midwestern US and spread to Europe, Australia, China, and North Africa; the second and more deadly wave started in France in August and quickly circulated around the world; the last wave was not as strong and hit some countries at the beginning of 1919 (Johnson 2006, 37–63). The last cases occurred in mid-1920 in Japan, Chile, and Peru (Spinney 2017, 45). Most of the deaths took place between mid-September and mid-December 1918, which coincided with the last phase of World War I. According to estimates by Patterson and Pyle (1991), the world death toll was in the range between 24.7 and 39.3 million people. India (between 12 and 20 million) and China (between 4 and 9.5 million) had the highest absolute numbers. About 550,000 died in the US, with a mortality rate of 5.2 deaths per thousand. Numbers for Europe were approximately 2.3 and 4.8 million, for mortality rate and total death toll respectively. The name *Spanish Influenza* derives from the fact that Spain was the first country to have its civilian population deeply hit by the flu (in May 1918); accordingly, the first reports about it appeared in the Spanish press, which was not censored as the country was neutral during the war (Spinney 2017, 63). Whereas the pandemic death toll in the US was around 5 times bigger than the number of war casualties (as the US entered the war as late as April 1917), the proportions were distinct in the main European belligerent countries, where more people died from the

war than from the flu: 6 times more in France, 4 times in Germany, 3 times in Great Britain, and 2 times in Italy (Spinney 2017, 63). The Spanish flu (like the war) killed mainly people aged 15–44, resulting in a W-shaped mortality distribution, rather than the customary U-shape for previous pandemics. It represented an unparalleled negative labour supply shock (see, for example, Velde 2020, 3–4).

III. HOW EPIDEMIOLOGISTS AND STATISTICIANS REACTED TO THE PANDEMIC

Epidemics of influenza were nothing new in the beginning of the twentieth century. In the nineteenth century alone, “four great pandemics of influenza” had occurred, the last one around 1890 (Oliver 1918, 356). The new pandemic was widely discussed in both medical journals (such as *The Lancet* and the *British Medical Journal*) and general science journals (such as *Science* and *Scientific American*). Among the topics of debate were the severity of the pandemic in comparison to previous ones (for example, Soper 1918) and the origin of the disease, with some suspecting a virus rather than Pfeiffer’s bacillus was the cause (see, for example, Oliver 1919).

By the beginning of 1919, epidemiologists were alarmed by the scale and the seriousness of the pandemic.

The pandemic of influenza which swept over the world in 1918 was the most severe outbreak of this disease which has ever been known, and it takes an unpleasantly high rank in the roster of epidemics generally. (Pearl 1919, 1743)

With these words Raymond Pearl, the biostatistician, opened the first instalment of his “Influenza Studies”, published in August 1919. For Pearl, this was an urgent call for scientific research:

If every epidemiologist does not take advantage of the present opportunity to investigate with all possible thoroughness epidemic influenza, to the end of making a better defense next time, he will have been derelict in his plain duty. (Pearl 1919, 1744)

Following his own advice, he studied influenza mortality in forty major cities in the US. Using data on excess mortality, he constructed five “epidemicity indices” for measuring “the force of the epidemic explosion in any particular place” (Pearl 1919, 1767). He then proceeded to a multiple

correlation analysis in which he explored the connections between one of these indices, which he called the “peak-time ratio”, and variables such as population density, geographical location, and age distribution of the population. Since not much came out of the analysis, he considered mortality rates just prior to the pandemic. In this case, he found significantly positive correlations between the peak-time ratio on the one hand, and mortality from pulmonary tuberculosis, heart diseases, and kidney failures on the other. In the second, third, and fourth instalments of his “Influenza Studies” (Pearl 1921a), he further refined the analysis, partly in response to criticism he had received. A survey of the results obtained by Pearl and others can be found in the monograph by Warren Vaughan (1921).

Among those who were critical of Pearl’s approach were Wade Frost and Edgar Sydenstricker, respectively surgeon and statistician at the United States Public Health Service. Their primary concern was to get good data. Aware of the fact that the available influenza statistics were of poor quality (Sydenstricker 1918), they organized special surveys in order to obtain more accurate data. In March 1919, they reported preliminary results from surveys made in Maryland (Frost and Sydenstricker 1919a) and, in June, they reviewed the evidence from other countries (Frost and Sydenstricker 1919b). Later that year, Frost used the data of their surveys to compare the 1918 pandemic to previous epidemics of influenza and pneumonia, and arrived at the conclusion:

In general, this epidemic has been quite similar to that of 1889–1890 in its early development, first in mild, scattered outbreaks, later in a severe world-wide epidemic; in the rapidity of its spread, and in its high case incidence. It has been notably different in a much higher frequency of pneumonia and consequently much higher mortality, especially among young adults. (Frost 1919, 318)

Frost concluded his research on influenza by publishing a summary of the main results of the surveys (Frost 1920), while Sydenstricker used the data to estimate the trend of case fatality during the epidemic (Sydenstricker 1921).

After that, both Frost and Sydenstricker moved on to other topics. Remarkably, ten years later, Sydenstricker revisited the data they had collected to examine whether there was any truth in the popular belief that “the flu hit the rich and the poor alike” (Sydenstricker 1931, 154). By means of a meticulous analysis, he arrived at the conclusion that this

was not entirely correct. The empirical evidence pointed in the direction of a clear social gradient, with incidence and mortality higher among the poorer classes of society, even after correcting for differences in age, sex, and “colour”. This paper stands out as an early example of a careful study of socioeconomic inequality of health.

Physicians did not know what caused the Spanish flu and, therefore, did not know how to treat it properly. As pointed out by Tognotti (2003), over-confidence and Pasteur’s revolution (the idea that every infectious disease was caused by a bacterium), led the international scientific community to mistakenly accept the German bacteriologist Rudolf Pfeiffer’s 1892 claim that he had identified the pathogenic influenza agent in a bacterium. It took some time for scientists to admit that the Spanish flu originated from a virus, not a bacterium. The collapse of the ‘Pfeiffer doctrine’ was accompanied by a crisis suffered by bacteriology in the autumn of 1918, around the same time the disease raged worldwide.

IV. THE SILENCE OF THE ECONOMISTS

In contrast to epidemiologists and statisticians, economists remained virtually silent. None of the major economics journals published an article on the pandemic in the period 1918–1921. Indeed, whereas the modern literature on the economic impacts of the 1918–1920 flu refers often to classic works about the flu by epidemiologists and statisticians, such as Pearl and Sydenstricker (see, for example, Basco, Domènech, and Rosés 2021; Beach, Clay, and Saavedra, forthcoming; Velde 2020), references to contemporary economists are conspicuous by their absence.

A striking example of the lack of attention by economists to the flu pandemic at the time is provided by the *American Economic Association* and its journal, *The American Economic Review*. From the 31st Annual Meeting (held in December 1918) to the 34th Annual Meeting (held in December 1921), not a single paper was devoted to the pandemic or to health issues, according to the programmes in the ‘Papers and Proceedings’ supplements of *The American Economic Review* published in the month of March of the following year. In that period, just one article of *The American Economic Review* referred to the flu pandemic—even so, only metaphorically. The context was the taxation of war profits. Carl C. Plehn noted that the practice of taxing war profits had spread rapidly to many countries after it had been introduced in Denmark and Sweden in 1915: “Like the Spanish influenza it speedily infected all the belligerent

countries on both sides of the fighting lines and also most neutral countries” (Plehn 1920, 285). Such metaphorical usage of epidemic terms by economists may be traced to the nineteenth-century literature on financial and economic crises, which often deployed “epidemic” and “contagion” to describe them—see, for example, Longfield’s (1840, 222) description that “the demand for gold for hoarding [...] is like an epidemic [...] like the plague or any other infectious disease which may cease of itself” (see also Besomi 2009, 44, where other instances may be found). It was only much later that economists went beyond the metaphorical stage and started applying epidemiological models to the study of economic movements (see Shiller and Pound 1989).

A similar pattern can be observed in the *Journal of Political Economy*. The pandemic is mentioned, but only sporadically and incidentally; there is no in-depth analysis of the immediate impact of the shock and its effects. In a section on ‘Health and sanitation’ of an article on the shipbuilding industry it is reported that:

Epidemics of smallpox and typhoid fever were successfully handled in seven localities [...]. Special aid was rendered during the influenza epidemic, and, where the scourge threatened serious curtailment of shipbuilding, temporary hospitals were erected. (Douglas and Wolfe 1919, 380)

Likewise, in an article on industrial training in the war period, the discrepancy between the actual and planned numbers of trained men “is attributed largely to a shortage of men in October [1918], and to delays occasioned by the epidemic of influenza” (Wolfe 1919, 741). There is one further brief mention of the epidemic in an article on the street-railway system in Seattle (Douglas 1921, 461). In *The Review of Economics and Statistics*, the situation is more or less the same (with the partial exception of Persons’ 1923 work on trade indexes discussed below). Like Douglas and Wolfe (1919), Berridge (1920, 185, 188) briefly mentioned the influenza epidemic’s effects on labour supply, this time in connection with gold mining industries in South Africa and Rhodesia.

In American journals with a wider economic focus, such as the thematic issues of *The Annals of the American Academy of Political and Social Science*, one finds a few passing references to the pandemic and its deadly effects. In a fierce attack on communism, Thomas R. Marshall (1919, 199–200) referred to what he saw as the strong but temporary effects of the flu pandemic: “Bolshevism may come the world over, but

it will be like the influenza—it may kill its millions, but sooner or later it will pass away”. Preston Clark (1919, 46) mentioned the fight against typhus and influenza as examples of fruitful cooperation between Americans and Mexicans. In the same issue of the journal, John Caskie (1919, 189) praised the work that had been done in the city of Philadelphia in order to stop the influenza epidemic, “that dreadful scourge”. L. Wallace (1921, 41–42) drew attention to the substantial economic loss (“industrial waste”) entailed by “subnormal standards of health and vigour”, with influenza being one of the prominent causes. Wilhelm Winkler (1921, 5) presented calculations of the effect of the influenza pandemic on the civilian population of Austria, noting that it “had easy play with the population which had been weakened through lack of proper nourishment”.

In European economic journals, the situation was largely similar. The *Revue d'Économie Politique* reported on Jean Bourdon's research on the population of France in 1918, which highlighted the brutal increase of the mortality rate in the second half of the year as a result of the “grippe” epidemic. According to Bourdon, mortality was higher than it had ever been in the forty years before (*Revue d'Économie Politique* 1919b, 815–816). The journal also noted that the epidemic had put a heavy burden on the population of Germany (*Revue d'Économie Politique* 1919a, 127). In the *Jahrbücher für Nationalökonomie und Statistik*, Ludwig Elster looked more deeply into the available statistics on the evolution of the German population during the war period. He observed that the high death toll of the epidemic in the second half of 1918 among the civilian population had been largely disregarded, and that it could be attributed, to a certain extent, to the weakened health of the population as a result of food deficiencies, brought about by the blockade during the war (Elster 1919, 155–156). Using data for the city of Berlin, Hans Guradze (1921, 531) found that women were hit harder than men by the food deficiencies and economic difficulties, which explained why they were more susceptible to get influenza and tuberculosis. In another article, H. Fehlinger (1921, 534) saw influenza as the main cause for South Africa's exceptionally high mortality rate in 1918. Still in the same journal, E. Mittermüller (1921, 7) pointed out that increased mortality and morbidity due to the war and the influenza epidemic had unfavourable effects on the German life insurance sector.

The connection between the influenza epidemic and insurance issues was also made in British and American actuarial journals. Arthur

Hunter (1919, 264) drew attention to the exceptionally high mortality rates in the US in the last three months of 1918. As far as Britain was concerned, while Lewis Orr (1921-1924, 53-54) acknowledged that the mortality rate had been high in 1918, he observed it had been much lower in 1919 and 1920; therefore, it seemed that the secular decline of mortality rates continued. Actuaries Frankel and Dublin (1919a, 1919b) discussed in detail the impact of the flu pandemic on workers' mortality rates and the American insurance business. The periodical *Economic World* also featured an article about the flu pandemic and the insurance market (Marsh 1918).

If we extend our scope beyond economic journals, the picture remains unchanged. In the period 1918-1921, no economist published a book dealing with the pandemic, or mentioned the topic prominently as part of economic books. Startling as it may seem, John Maynard Keynes did not mention influenza in *The Economic Consequences of the Peace* (1919), even though he had contracted the disease while he was in Paris in January 1919 (Harrod 1951, 234). Keynes (1919, 250n1) did, however, refer to fragile health conditions caused by malnutrition and the spread of tuberculosis in Central Europe during the war, which was part of his argument about the inability of Germany, Austria, and other countries to pay for war reparations. Another Cambridge economist, Arthur Cecil Pigou, did not refer to the Spanish flu either in his classic *The Economics of Welfare*. Pigou (1920, 872, 943) deployed the term "epidemic", but only as a metaphor ("epidemics of optimism") or as shock of "misfortune" which insurance businesses and other companies should be protected against.

A few years later the well-known Italian economist and demographer Giorgio Mortara (1925) would refer extensively to the effects of the flu in his detailed account of mortality patterns in Italy during and shortly after the war. The links between epidemics and demography went back to Thomas Robert Malthus' famous *An Essay on the Principle of Population*. Malthus ([1798] 1826, Book II, Chapter XII) listed epidemics, together with wars and famines, as main examples of "positive checks" on population growth. In his careful historical-statistical investigation, Malthus treated recurring epidemic episodes as endogenous to the conditions of living. The history of epidemics, he claimed, showed that the "lower classes of people, whose food was poor and insufficient, and who lived crowded together in small and dirty houses" (Book IV, 258-259), were the main victims. He asks, in "what other manner can Nature point

out to us that”—if population increases too fast in relation to means of subsistence—“we have offended against one of her laws?” (Book IV, 259). The bigger impact of the Spanish flu on the poor sections of society seemed to confirm some of Malthus’ claims. However, Pearl and others denied both the war and the flu had permanent effects on population trends. According to Pearl (1921b, 121), those who saw in war and pestilence any solution to the population problem, “as postulated by Malthus”, were “optimistic indeed”.

The Swedish neo-Malthusian economist, Knut Wicksell ([1910] 1926, 12), noticed how the 1918–1920 flu caused an increase in mortality in Sweden, but regarded it as a detour from the overall trend of reduction in both mortality and fertility numbers in that country. Moreover, there is no evidence that Wicksell (or other prominent Swedish economists) ever discussed the economic impact of the 1918 flu, which brought about a marked contraction of economic activity and poverty increase in neutral Sweden (see *The Economist* 1918c; Karlsson, Nilsson, and Pichler 2014). Wicksell’s ([1919] 1978) economic view of the World War discussed demographic and monetary factors, with no mention of the flu. Economists remained largely silent about pandemics in the next couple of decades, as illustrated by the influential *International Encyclopaedia of the Social Sciences*, published between 1930 and 1935, which featured many contributions by economists. It included an entry on “Epidemics”, written by epidemiologist Clifford A. Gill (1934), with some discussion of the Spanish influenza pandemic. Gill did not mention any economic references, though. Similarly, in the entries of the *Handwörterbuch der Staatswissenschaften* on “Public hygiene” and “Infectious diseases”, both written by public health specialist Alfons Fischer (1923a, 1923b), no mention is made of publications by economists. The *Palgrave’s Dictionary of Political Economy*, edited by Henry Higgs in 1923–1926 as a new edition of the 1894–1899 original version put together by Inglis Palgrave, did not include any entries on epidemics or the Spanish flu.

V. BUSINESS CYCLE RESEARCH

While the Spanish flu pandemic was by and large ignored by economists, surely it cannot be that those who were monitoring business cycles did not notice the impact it had on the economy? As the pandemic unfolded, contemporary reports from agencies such as the Federal Reserve Bank drew attention to its adverse effects. Especially the November 1918 reports of the twelve Federal Reserve districts highlighted the eco-

conomic turmoil caused by the pandemic. In the district of Boston, “[t]he epidemic of influenza which has prevailed during the past month has seriously interfered with business” (Federal Reserve Board 1918, 1126). Likewise, in the districts of New York, Philadelphia, Richmond, Alabama, St. Louis, and Dallas, the pandemic, through its negative impact on labour supply, significantly troubled business and trade, while in the districts of Cleveland and Atlanta the pandemic was just “a slight disturbing element” (Federal Reserve Board 1918, 1131). However, by the end of the year, the district reports referred to the resumption of “normality” in both health and economic conditions, combined with the armistice in November that year.

Hence, the pandemic-induced recession was sharp but short-lived. It could only be captured by high-frequency data, not by annual statistics (Velde 2020; Beach, Clay, and Saavedra, forthcoming). As a result, business cycle experts did not generally refer to the economic effects of the flu. Indeed, Wesley C. Mitchell (1927) did not mention the Autumn 1918 recession of the pandemic in his detailed narrative of economic fluctuations in the US and European countries. In his later book with Arthur F. Burns, there is mention of the “contraction of 1918–19”, but, in view of its “exceptional brevity and moderate amplitude”, its “failure to register in annual summaries is not surprising” (Burns and Mitchell 1946, 109).

Shortly after the flu pandemic, Warren Persons provided a rare mention by a business cycle expert of the fact that “trade was adversely affected in the autumn of 1918 by a severe influenza epidemic” (1923, 72). Persons mentioned that as an example of “numerous irregular fluctuations” explainable by exogenous “contemporaneous events” that did not belong to the theory or measurement of business cycles conceived as the recurrence of regular economic fluctuations. Epidemics and other “minor irregular fluctuations” were not supposed to interfere with “major movements” formed by the “ebb and flow of industrial activity” (Persons 1923, 71). In particular, Persons’ monthly “trade index”, he claimed, indicated that the period 1916–1918 featured high economic activity, despite the downfall in the last quarter of 1918 associated to the flu as captured by the index. Mitchell (1927, 249ff.) further elaborated on Persons’ notion of “irregular fluctuations”, by treating them as “random events”, or shocks (a term Mitchell did not use), which he distinguished from seasonal, cyclical, or trend movements. Mitchell listed “epidemics”, together with strikes, transport congestions, inventions, and natural phenomena in general, as instances of irregular fluctuations

that posed a problem for the statistical treatment of economic fluctuations.

One might say that the pandemic lurks in the background of the path-breaking study on the social effects of business cycles published by William F. Ogburn and Dorothy S. Thomas in 1922. Using data for the US, they found that 1918 was a bit of an outlier; for instance, the mortality rate of that year was exceptionally high. They attributed this to “the extraordinary conditions of war time” (Ogburn and Thomas 1922, 331), and decided to calculate coefficients of correlation both with and without the year 1918. They did not mention influenza in their paper, but admitted that “climate, health education campaigns, developments of preventive medicine, and epidemics” (Ogburn and Thomas 1922, 338) could affect the relation between mortality and the business cycle. The study was included in the book published a few years later by Thomas ([1925] 1927) and is now considered a seminal contribution to the literature on “economic epidemiology” (Tapia Granados 2015, 1488).

VI. WHY THE SILENCE?

If it is true that economists more or less neglected the Spanish flu pandemic, the question is, *why*? In this section, we speculate about possible explanations.

Could it be that economists were forced or strongly advised not to pay attention to the influenza epidemic? It is well known that during (and also after) the Great War, authorities introduced a wide variety of censorship measures (Demm 2017). Newspapers and personal correspondence were controlled in order to avoid that too many details about military operations (for example, heavy losses on the battlefield) become public knowledge and to keep the spirits of the population high. The American President Woodrow Wilson never once publicly acknowledged the outbreak, fearing it would harm morale. Accordingly, the federal government’s response to the pandemic was essentially non-existent (see Barry 2004). The same applied to other belligerent countries. It is therefore possible that censorship or self-censorship caused economists to be reluctant to attend to the devastating pandemic (apart from the fact that it was not an object of central government policy). Yet medical researchers and epidemiologists apparently did not have the same scruples. Magazines like *The Economist* did refer on occasion to the pandemic, but that was “hidden” in parts not subject to censorship, with passing references to the pandemic’s effects on business conditions (see, for

example, *The Economist* 1918a). Numbers about the pandemic were not disclosed by that magazine until March 1919, when it was reported that, for the first time since the start of the records in the 1830s, the total civilian population in England and Wales had come down in 1918, largely due to the nearly 100,000 deaths caused by the pandemic in the last quarter of that year (*The Economist* 1919).

Perhaps a more convincing explanation can be found by looking into the topics that economists did pay attention to, for instance by considering the topics discussed at the annual meetings of the *American Economic Association*. Economists certainly did not shy away from studying urgent contemporary problems: ‘War and reconstruction’ was the general theme of the 30th Annual Meeting held in December 1917. It must be said, however, that the focus was on traditional economic issues, such as taxation, international trade, and agriculture. Government policy was also discussed, but health issues received no special mention and very little suggests that the pandemic changed economists’ attitude towards health. There is at least one notable exception: Irving Fisher’s Presidential Address “Economists in Public Service”, delivered in December 1918. Fisher pointed out that since the foundation of the association a tension existed in its ranks “between those economists who were conservative and those who were radical in regard to applying academic study” (Fisher 1919, 6). He wanted economists to do their “bit” and argued they should serve “all humanity throughout the world and throughout future generations” (Fisher 1919, 21). He was convinced that important lessons could be drawn from the war experience. Without mentioning the pandemic explicitly, one of the reforms he advocated related to health:

The great field of social insurance for workingmen and especially the next step—Health Insurance—should also engage our attention. Here, likewise, we must steer clear of the bias of the employer, the trade union, the insurance company, or the medical profession. (Fisher 1919, 19)

In a certain sense, Fisher called upon his fellow economists to venture beyond the traditional boundaries of their discipline. However, at the time, there was no such thing as ‘health economics’, and economists had no specific expertise with regard to epidemics or health issues in general. Interestingly, at the height of the pandemic, *The Economist* drew attention to the enormous economic costs of bad health in general (in-

cluding a brief mention of the Spanish flu) in an article aptly called “The economics of health”. It claimed that it was in the interest of Great Britain to change its health policy: “It is incontestable that a thorough reform of national health will require a large expenditure; but expenditure upon it, if well and judiciously made, will pay as handsomely as a business proposition” (*The Economist* 1918b, 833). That marked a significant change in that magazine’s previous editorial line against government intervention (see *The Economist* 2020a). In many countries the pandemic effectively led to the creation or restructuring of national public health systems (Johnson 2006, 196). In Great Britain, the Ministry of Health replaced the local government boards. It commissioned a *Report on the Pandemic of Influenza, 1918-19* (Ministry of Health 1920), which provided a first comprehensive overview of the pandemic in Britain and the rest of the world. What is striking in that report, however, is the lack of input by economists and the absence of an in-depth discussion of the economic effects of the Spanish flu. It is as if economics had nothing to contribute to the debate.

It was not that economists were not generally aware of the Spanish flu pandemic. However, apparently it was regarded as something outside the field of economics properly. Again, Irving Fisher provides a perfect illustration of that. Fisher had been concerned with health issues and campaigned for the improvement of health conditions for a long time. He criticized economists for focusing “exclusively on physical phenomena” and overlooking that the “true ‘wealth of nations’ is the health of its individuals” (Fisher 1906, 176; see also Nordhaus 2005). Shortly before the most acute phase of the pandemic, Fisher (1918) wrote an article about “Health and War”. His main contribution to the study of health improvement was his 1915 book, jointly written with Dr Eugene Fisk, which stressed rules of individual hygiene and life style from a broad hygiene-medical perspective. The 1919 edition included a section on “Cause and Treatment of Spanish Influenza” (Fisher and Fisk 1919, 375-376). Nevertheless, Fisher refrained from discussing the economic dimension and implications of the flu pandemic in his economic articles (including his 1918 Presidential Address) and books.

Moreover, in contrast with the Covid-19 outbreak, business lockdowns were not implemented during the 1918-1920 flu. The current trade-off between mandated closures and economic activity, which has loomed in the economic debates, was not a topic of discussion back then. Economic activity did come down at the time, but it was caused

mainly by flu-related illness and excess mortality that affected labour supply (see Bodenhorn 2020). Hence, unlike the current crisis, the downfall in economic activity was not reflected in unemployment data. In Sweden, for instance, the unemployment rate of trade union members did not go up in the last two quarters of 1918, despite the contraction of economic activity caused by the flu (see Boianovsky 1998, 231). Neither did economists (especially British) pay any attention to the extensive famine and economic effects of the flu in India (briefly mentioned in the 1920 *Report* of the Ministry of Health). Then a British colony, India's death toll was higher than all European nations put together (see Arnold 2019). Other countries, such as Brazil, also suffered from the flu (180,000 deaths). Brazil was far from and not directly involved in the war—although it did declare war to Germany in 1917. The flu outbreak featured prominently in the Brazilian press as well as in debates about workers' rights and cost of living stabilization, with no economic analytical contributions though (Boianovsky 2021).

Modern economists have managed to distinguish statistically the economic effects of the First War and the flu in some individual country cases and in large samples of countries. The Spanish flu was one of the most important negative global economic shocks in the period 1870–2008, next to the two World Wars and the Great Depression. Increasing mortality associated with World War I and the Spanish flu were estimated to reduce income per capita in the typical country by 8.4% and 6.2%, respectively (Barro, Ursúa, and Weng 2020). However, contemporary economists did not and could not grasp the full extent of the economic impact of flu-induced illness and mortality in 1918–1920.

VII. CONCLUDING REMARKS

As discussed above, up to and including the 1918 Spanish flu outbreak and its aftermath, economists had used the notion of 'epidemics' in three ways: (i) as a metaphor, (ii) as an element of demographic analysis, and (iii) as a cause of irregular fluctuations. Although epidemiological models found their way into financial economics (see, for example, Shiller and Pound 1989) and the AIDS epidemic led to an increased awareness of infectious diseases among economists (see, for example, Philipson and Posner 1993), the full integration of pandemic phenomena into economics in general would have to wait until the Covid-19 crisis. This reflects as well sharp differences in the structure of the economic

profession nowadays, with its much larger participation in the political discourse.

Our paper has addressed the differences in economists' reactions now versus then, with some speculative answers. We did not aim to cover the full range of primary sources; but, even if some sources have been overlooked, it is unlikely that they had left significant traces in contemporary discussions. Our investigation indicates that economists did not pay close attention to the Spanish flu outbreak and its economic impact at the time. This may be explained in part by factors related to the organization of the economic profession and of economists' self-perception of the scope of their activities (as illustrated by Fisher). Moreover, it has to do with the degree of visibility of the economic features of the pandemic around the end of the war (as illustrated by Persons) and with the absence of nation-wide government policies to fight the pandemic, such as lockdowns. Because of the war censorship and timing, the episode was poorly covered by newspapers, especially in Great Britain and other European belligerent countries, which contributed to the fact that the Spanish Influenza was "largely forgotten" (*The Economist* 2020a). The decision by governments to "bury the human toil of the disease in the collective memory of World War I" was another contributing factor (*The Economist* 2020a). This is well illustrated by the Carnegie Endowment's 208 volumes on the *Economic and Social History of the World War*, published in the mid-1920s, which devoted only a few pages to the "grippe" and then primarily as a medical or statistical phenomenon (for example, by Mortara 1925).

As put by Spinney (2017, 8), the Spanish flu existed for a long time as little more than a footnote to the massive event represented by World War I. For epidemiologists, however, the Spanish flu served as a call to arms, and it was in the aftermath of the flu pandemic that Kermack and McKendrick (1927) put forward the SIR epidemiological model, extensively deployed by economists and other professionals in the current Covid-19 pandemic. Even though the relation between economists and epidemiologists remains "testy" (*The Economist* 2020b), it is clear that studying the effects of a pandemic has become a priority for both today.

REFERENCES

- Arnold, David. 2019. "Death and the Modern Empire: The 1918–19 Influenza Epidemic in India." *Transactions of the Royal Historical Society* 29: 181–200.
- Avery, Christopher, William Bossert, Adam Clark, Glenn Ellison, and Sara Fisher Ellison. 2020. "An Economist's Guide to Epidemiology Models of Infectious Disease." *Journal of Economic Perspectives* 34 (4): 79–104.
- Barro, Robert J., José F. Ursúa, and Joanna Weng. 2020. "The Coronavirus and the Great Influenza Pandemic: Lessons from the 'Spanish Flu' for the Coronavirus's Potential Effects on Mortality and Economic Activity." NBER Working Paper No. 26866. National Bureau of Economic Research, Cambridge, MA.
- Barry, John M. 2004. *The Great Influenza: The Epic Story of the Deadliest Plague in History*. New York, NY: Viking.
- Basco, Sergi, Jordi Domènech, and Joan R. Rosés. 2021. "Unequal Mortality during the Spanish Flu." LSE Economic History Working Papers No. 325. London School of Economics, London.
- Beach, Brian, Karen Clay, and Martin Saavedra. Forthcoming. "The 1918 Influenza Pandemic and Its Lessons for COVID-19." *Journal of Economic Literature*.
- Berridge, William A. 1920. "The World's Gold Supply." *The Review of Economics and Statistics* 2 (7): 181–199.
- Besomi, Daniele. 2009. "Clément Juglar and His Contemporaries on the Causes of Commercial Crises." *Revue Européenne des Sciences Sociales* 47 (143): 17–47.
- Bodenhorn, Howard. 2020. "Business in a Time of Spanish Influenza." NBER Working Paper No. 27495. National Bureau of Economic Research, Cambridge, MA.
- Boianovsky, Mauro. 1998. "Wicksell on Deflation in the Early 1920s." *History of Political Economy* 30 (2): 219–275.
- Boianovsky, Mauro. 2021. "Economists, Scientific Communities, and Pandemics: An Exploratory Study of Brazil (1918–2020)." *Economia* 22 (1): 1–18.
- Burns, Arthur F., and Wesley C. Mitchell. 1946. *Measuring Business Cycles*. New York, NY: National Bureau of Economic Research.
- Caskie, John J. Kerr. 1919. "The Philadelphia Rapid Transit Plan." *The Annals of the American Academy of Political and Social Science* 85 ('Modern Manufacturing. A Partnership of Idealism and Common Sense'): 189–204.
- Clark, B. Preston. 1919. "On the Motives of Industrial Enterprise." *Annals of the American Academy of Political and Social Science* 85 ('Modern Manufacturing. A Partnership of Idealism and Common Sense'): 37–47.
- Correia, Sergio, Stephan Luck, and Emil Verner. 2020. "Pandemics Depress the Economy, Public Health Interventions Do Not: Evidence from the 1918 Flu." SSRN Working Paper No. 3561560. SSRN, Rochester, NY.
- Coyle, Diane. 2020. "From Villains to Heroes? The Economics Profession and Its Response to the Pandemics." *Covid Economics: Vetted and Real-Time Papers* 48: 242–256.
- Crosby, Alfred W. (1989) 2003. *America's Forgotten Pandemic: The Influenza of 1918*. 2nd edition. Cambridge: Cambridge University Press.
- Demm, Eberhard. 2017. "Censorship." 1914-1918-Online: International Encyclopedia of the First World War. Version 2.0. <https://encyclopedia.1914-1918-online.net/article/censorship/2017-03-29?version=2.0>.

- Douglas, Paul H. 1921. "The Seattle Municipal Street-Railway System." *Journal of Political Economy* 29 (6): 455-477.
- Douglas, Paul H., and French E. Wolfe. 1919. "Labor Administration in the Shipbuilding Industry During War Time. II." *Journal of Political Economy* 27 (5): 362-396.
- Elster, Ludwig. 1919. "Der Einfluß des Krieges auf die Bevölkerungsbewegung in Deutschland." *Jahrbücher für Nationalökonomie und Statistik* 113 (1): 152-161.
- Federal Reserve Board. 1918. "General Business Conditions." *Federal Reserve Bulletin* 4 (11): 1126-1141.
- Fehlinger, Hans. 1921. "Volk und Wirtschaft in Südafrika." *Jahrbücher für Nationalökonomie und Statistik* 61 (6): 533-537.
- Fischer, Alfons. 1923a. "Hygiene, öffentliche." In *Handwörterbuch der Staatswissenschaften: Fünfter Band*, edited by Ludwig Elster, Adolf Weber, and Friedrich Wieser, 295-317. Jena: Gustav Fischer.
- Fischer, Alfons. 1923b. "Infektionskrankheiten." In *Handwörterbuch der Staatswissenschaften: Fünfter Band*, edited by Ludwig Elster, Adolf Weber, and Friedrich Wieser, 427-444. Jena: Gustav Fischer.
- Fisher, Irving. 1906. *The Nature of Capital and Income*. London: Macmillan.
- Fisher, Irving. 1918. "Health and War." *American Journal of Public Health* 8 (8): 559-563.
- Fisher, Irving. 1919. "Economists in Public Service: Annual Address of the President." *The American Economic Review* 9 (1, Supplement): 5-21.
- Fisher, Irving, and Eugene Lyman Fisk. 1919. *How to Live: Rules for Healthful Living Based on Modern Science*. Revised and expanded edition. First published in 1915. New York, NY: Funk and Wagnalls.
- Frankel, Lee K., and Louis I. Dublin. 1919a. "Influenza Mortality Among Wage Earners and Their Families: A Preliminary Statement of Results." *American Journal of Public Health* 9 (10): 731-742.
- Frankel, Lee K., and Louis I. Dublin. 1919b. *Influenza Mortality Among Wage Earners and Their Families*. New York, NY: Metropolitan Life Insurance Company.
- Frost, Wade H. 1919. "The Epidemiology of Influenza." *Journal of the American Medical Association* 73 (5): 313-318.
- Frost, Wade H. 1920. "Statistics of Influenza Morbidity: With Special Reference to Certain Factors in Case Incidence and Case Fatality." *Public Health Reports* 35 (11): 584-597.
- Frost, Wade H., and Edgar Sydenstricker. 1919a. "Influenza in Maryland: Preliminary Statistics of Certain Localities." *Public Health Reports* 34 (11): 491-504.
- Frost, Wade H., and Edgar Sydenstricker. 1919b. "Epidemic Influenza in Foreign Countries." *Public Health Reports* 34 (25): 1361-1376.
- Gill, Clifford A. 1934. "Epidemics." In *International Encyclopaedia of the Social Sciences: Volume V*, edited by Edwin R. A. Seligman, 569-572. New York, NY: Macmillan.
- Guradze, Hans. 1921. "Berlins Bevölkerungsbewegung in und nach dem Weltkriege." *Jahrbücher für Nationalökonomie und Statistik* 61 (6): 530-532.
- Harrod, Roy F. 1951. *The Life of John Maynard Keynes*. London: Macmillan.
- Higgs, Henry, ed. 1923-1926. *Palgrave's Dictionary of Political Economy*. 3 volumes. London: Macmillan.
- Hunter, Arthur. 1919. "The American-Canadian Mortality Investigation, 1900-1915." *Journal of the Institute of Actuaries* 51 (3): 337-346.

- Johns Hopkins University. 2021. "Johns Hopkins Coronavirus Resource Center." Accessed March, 2021. <https://coronavirus.jhu.edu/>.
- Johnson, Niall. 2006. *Britain and the 1918-19 Influenza Pandemic. A Dark Epilogue*. New York, NY: Routledge.
- Karlsson, Martin, Therese Nilsson, and Stefan Pichler. 2014. "The Impact of the 1918 Spanish Flu Epidemic on Economic Performance in Sweden: An Investigation Into the Consequences of an Extraordinary Mortality Shock." *Journal of Health Economics* 36: 1-19.
- Kermack, William O., and Anderson G. McKendrick. 1927. "A Contribution To the Mathematical Theory of Epidemics." *Proceedings of the Royal Society of London A: Mathematical, Physical and Engineering Sciences* 115 (772): 700-721.
- Keynes, John Maynard. 1919. *The Economic Consequences of the Peace*. London: Macmillan.
- Longfield, Mountifort. 1840. "Banking and Currency." *Dublin University Magazine* 15: 1-16, 218-233.
- Malthus, Thomas R. (1798) 1826. *An Essay on the Principle of Population*. 6th edition, 2 volumes. London: John Murray.
- Marsh, Arthur R. 1918. "The Influenza Epidemic and Life Insurance." *The Economic World* 102: 776.
- Marshall, Thomas R. 1919. "America, the Nations and the League." *The Annals of the American Academy of Political and Social Science* 84 ('International Reconstruction'): 194-200.
- Ministry of Health. 1920. *Report on the Pandemic of Influenza, 1918-19*. London: H. M. Stationary Off.
- Mitchell, Wesley C. 1927. *Business Cycles: The Problem and its Setting*. New York, NY: National Bureau of Economic Research.
- Mittermüller, Eugen. 1921. "Die private deutsche Lebensversicherung nach dem Kriege." *Jahrbücher für Nationalökonomie und Statistik* 61 (1): 1-43.
- Mortara, Giorgio. 1925. *La Salute Pubblica in Italia Durante e Dopo la Guerra*. Bari: Laterza.
- Murray, Eleanor J. 2020. "Epidemiology's Time of Need: COVID-19 Calls for Epidemic-Related Economics." *Journal of Economic Perspectives* 34 (4): 105-120.
- Nordhaus, William D. 2005. "Irving Fisher and the Contribution of Improved Longevity to Living Standards." *The American Journal of Economics and Sociology* 64 (1): 367-392.
- Ogburn, William F., and Dorothy S. Thomas. 1922. "The Influence of the Business Cycle on Certain Social Conditions." *Journal of the American Statistical Association* 18 (139): 324-340.
- Oliver, Wade W. 1918. "Spanish Influenza." *Scientific American* 119 (18): 356-357.
- Oliver, Wade W. 1919. "Influenza—The Sphinx of Diseases." *Scientific American* 120 (9): 200, 212-213.
- Orr, Lewis P. 1921-1924. "Inaugural Address—Session 1921-22." *Transactions of the Faculty of Actuaries* 9 (83): 39-62.
- Palgrave, Robert H. Inglis, ed. 1894-1899. *Dictionary of Political Economy*. 3 volumes. London: Macmillan.
- Patterson, K David, and Gerald F. Pyle. 1991. "The Geography and Mortality of the 1918 Influenza Pandemic." *Bulletin of the History of Medicine* 65 (1): 4-21.

- Pearl, Raymond. 1919. "Influenza Studies: I. On Certain General Statistical Aspects of the 1918 Epidemic in American Cities." *Public Health Reports* 34 (32): 1743-1783.
- Pearl, Raymond. 1921a. "Influenza Studies." *Public Health Reports* 36 (7): 273-298.
- Pearl, Raymond. 1921b. "A Further Note On War and Population." *Science* 53 (1362): 120-121.
- Persons, Warren M. 1923. "An Index of Trade for the United States." *The Review of Economics and Statistics* 5 (2): 71-78.
- Philipson, Tomas J., and Richard A. Posner. 1993. *Private Choices and Public Health: The AIDS Epidemic in an Economic Perspective*. Cambridge, MA: Harvard University Press.
- Pigou, Arthur C. 1920. *The Economics of Welfare*. London: Macmillan.
- Plehn, Carl C. 1920. "War Profits and Excess Profits Taxes." *The American Economic Review* 10 (2): 283-298.
- Revue d'Économie Politique*. 1919a. "Nouvelles et Notices." *Revue d'Économie Politique* 33 (1): 125-128.
- Revue d'Économie Politique*. 1919b. "Nouvelles et Notices." *Revue d'Économie Politique* 33 (6): 814-816.
- Shiller, Robert J., and John Pound. 1989. "Survey Evidence of Diffusion of Interest Among Institutional Investors." *Journal of Economic Behavior and Organization* 12 (1): 47-66.
- Soper, George A. 1918. "The Influenza Pneumonia Pandemic in the American Army Camps During September and October, 1918." *Science* 48 (1245): 451-456.
- Spinney, Laura. 2017. *Pale Rider: The Spanish Flu of 1918 and How It Changed the World*. London: Jonathan Cape.
- Sydenstricker, Edgar. 1918. "Preliminary Statistics of the Influenza Epidemic." *Public Health Reports* 33 (52): 2305-2321.
- Sydenstricker, Edgar. 1921. "Variations in Case Fatality During the Influenza Epidemic of 1918." *Public Health Reports* 36 (36): 2201-2210.
- Sydenstricker, Edgar. 1931. "The Incidence of Influenza Among Persons of Different Economic Status During the Epidemic of 1918." *Public Health Reports* 46 (4): 154-170.
- Tapia Granados, José A. 2015. "Commentary: William Ogburn, Dorothy Thomas and the Influence of Recessions and Expansions on Mortality." *International Journal of Epidemiology* 44 (5): 1484-1490.
- The Economist*. 1918a. "The Money Market." *The Economist*, July 6, 1918.
- The Economist*. 1918b. "The Economics of Health." *The Economist*, December 21, 1918.
- The Economist*. 1918c. "Swedish Affairs." *The Economist*, September 14, 1918.
- The Economist*. 1919. "Business Conditions. Decrease in the Population." *The Economist*, March 22, 1919.
- The Economist*. 2020a. "How the Spanish Flu of 1918-20 Was Largely Forgotten." *The Economist*, April 18, 2020. <https://www.economist.com/international/2020/04/18/how-the-spanish-flu-of-1918-20-was-largely-forgotten>.
- The Economist*. 2020b. "Why Relations Between Economists and Epidemiologists Have Been Testy." *The Economist*, November 12, 2020. <https://www.economist.com/finance-and-economics/2020/11/14/why-relations-between-economists-and-epidemiologists-have-been-testy>.

- Thomas, Dorothy Swaine. (1925) 1927. *Social Aspects of the Business Cycle*. New York, NY: Alfred A. Knopf.
- Tognotti, Eugenia. 2003. "Scientific Triumphalism and Learning From Facts: Bacteriology and the 'Spanish Flu' Challenge of 1918." *Social History of Medicine* 16 (1): 97-110.
- Vaughan, Warren T. 1921. *Influenza: An Epidemiologic Study*. Baltimore, MD: The American Journal of Hygiene.
- Velde, François R. 2020. "What Happened to the US Economy During the 1918 Influenza Pandemic? A View Through High-Frequency Data." Federal Reserve Bank of Chicago Working Paper No. 2020-11. Federal Reserve Bank of Chicago, Chicago, IL.
- Wallace, Lawrence W. 1921. "Industrial Waste." *The Annals of the American Academy of Political and Social Science* 97 ("The Revival of American Business"): 36-42.
- Wicksell, Knut. (1910) 1926. *Läran om Befolkningen: Dess Sammansättning och Förändringar*. Stockholm: Albert Bonniers Förlag.
- Wicksell, Knut. (1919) 1978. "The World War: An Economist's View." *The Scandinavian Journal of Economics* 80 (2): 236-249.
- Winkler, Wilhelm. 1921. "The Population of the Austrian Republic." *The Annals of the American Academy of Political and Social Science* 98 ("Supplement: Present Day Social and Industrial Conditions in Austria"): 1-6.
- Wolfe, Albert B. 1919. "Intensive Industrial Training Under Government Auspices in War Time." *The Journal of Political Economy* 27 (9): 725-758.
- World Bank. 2021. *Global Economic Prospects, January 2021*. Washington, DC: World Bank.

Mauro Boianovsky is a professor of economics at the Department of Economics at Universidade de Brasilia, Brazil. He holds a PhD in economics from Cambridge University, and has published a number of articles, book chapters, and books in the field of history of economics. He served as president of the History of Economics Society in 2016-2017. Contact e-mail: <mboianovsky@gmail.com>

Guido Erreygers is a professor of economics at the Department of Economics at the University of Antwerp, Belgium, and visiting researcher at the Centre for Health Policy at the University of Melbourne, Australia. He holds a PhD in economics from Université Paris X - Nanterre, and has published in both history of economic thought journals and health economics journals. He has also edited and co-edited several books. Contact e-mail: <guido.erreygers@uantwerpen.be>