

ISSN 0309-166X (PRINT)
ISSN 1464-3545 (ONLINE)

CAMBRIDGE JOURNAL OF ECONOMICS

Volume 43 Number 3 May 2019

Downloaded from <https://academic.oup.com/cje/issue/43/3> by guest on 05 November 2020

Published on behalf of the Cambridge Political Economy Society

OXFORD
UNIVERSITY PRESS

CAMBRIDGE JOURNAL OF ECONOMICS

PATRONS

Luigi Pasinetti
Amartya Sen
Frank Wilkinson

EDITORS

Jonathan Aldred
Brendan Burchell
Ken Coutts
Simon Deakin
Michael Ellman
Philip Faulkner
Geoffrey Ingham
Michael Kitson
Sue Konzelmann
Jacqui Lagrue (Managing Editor)

Clive Lawson
Tony Lawson
Ron Martin
Gabriel Palma
Christos Pitelis
Stephen Pratten
Jochen Runde
Alan Shipman
Frank Wilkinson

ASSOCIATE EDITORS

Amiya Bagchi (India)
Stephanie Blankenburg (Switzerland)
Ha-Joon Chang (UK)
Francis Cripps (UK)
Sheila Dow (UK & Canada)
Paul Dunne (UK)
Martin Fetherston (USA)
Diane Flaherty (USA)
Harvey Gram (USA)
Geoff Harcourt (Australia)
Geoff Hodgson (UK)
Alan Hughes (UK)
Jane Humphries (UK)
Mushtaq Khan (UK)
Lawrence King (USA)
Peter Kriesler (Australia)

Michael Landesmann (Austria)
Ned Lorenz (France)
Jonathan Michie (UK)
Jamie Morgan (UK)
Patrick Murray (USA)
Mario Nuti (UK)
Terry O'Shaughnessy (UK)
Pascal Petit (France)
Jill Rubery (UK)
John Sender (UK)
Anwar Shaikh (USA)
Ron Smith (UK)
Ian Steedman (UK)
Terry Ward (UK)
Hugh Whittaker (UK)

The Cambridge Journal of Economics, founded in the traditions of Marx, Keynes, Kalecki, Joan Robinson and Kaldor, welcomes contributions from heterodox economics as well as other social science disciplines. Within this orientation the journal provides a focus for theoretical, applied, interdisciplinary, history of thought and methodological work, with strong emphasis on realistic analysis, the development of critical perspectives, the provision and use of empirical evidence, and the construction of policy. The Editors welcome submissions in this spirit on economic and social issues including, but not only, unemployment, inflation, the organisation of production, the distribution of the social product, class conflict, economic underdevelopment, globalisation and international economic integration, changing forms and boundaries of markets and planning, and uneven development and instability in the world economy.

Abstracted and Indexed by *Geo Abstracts*, *Social Sciences Abstracts*, *ISI: Social Sciences Citation Index*, *Journal of Economic Literature*, *e-JEL*, *Social Science Research Network (SSRN)*, *British Humanities Index*, *Research in Economic Papers (RePEc)* and *EconLit*.

SUBSCRIPTIONS

A subscription to *Cambridge Journal of Economics* comprises 6 issues, published in January, March, May, July, September and November. All prices include postage, and for subscribers outside the UK delivery is by Standard Air.

Cambridge Journal of Economics Advance Access contains papers that have been finalised, but have not yet been included within the issue.

Annual Subscription Rate (Volume 43, 6 issues, 2019)

Institutional: Print edition and site-wide online access: £621.00/\$1179.00/€931.00. Print edition only: £572.00/\$1087.00/€858.00. Site-wide online access only: £481.00/\$913.00/€721.00.

Personal: Print edition and individual online access: £85.00/\$168.00/€127.00. A combined price is available for a subscription to *Cambridge Journal of Economics* and *Contributions to Political Economy*.

Institutional: Print edition and site-wide online access: £693.00/\$1323.00/€1038.00. Print edition only: £638.00/\$1220.00/€957.00. *Personal*: Print edition and individual online access: £98.00/\$186.00/€146.00. Please note: US\$ rate applies to US and Canada, Euros applies to Europe, UK£ applies to UK and Rest of World. There are other subscription rates available, for a complete listing please visit <https://academic.oup.com/cje/subscribe>.

Full prepayment, in the correct currency, is required for all orders. Orders are regarded as firm and payments are not refundable. Subscriptions are accepted and entered on a complete volume basis. Claims cannot be considered more than FOUR months after publication or date of order, whichever is later. All subscriptions in Canada are subject to GST. Subscriptions in the EU may be subject to European VAT. If registered, please supply details to avoid unnecessary charges. For subscriptions that include online versions, a proportion of the subscription price may be subject to UK VAT. Personal rate subscriptions are only available if payment is made by personal cheque or credit card and delivery is to a private address. The current year and two previous years' issues are available from Oxford University Press. Previous volumes can be obtained from Swets and Zeitlinger, Backsets Department, PO Box 830, 2160 SZ, Lisse, Holland. Tel: +31 252 435 111.

For further information, please contact: Journals Customer Service Department, Oxford University Press, Great Clarendon Street, Oxford OX2 6DP, UK. Email: jnls.cust.serv@oup.com. Tel (and answerphone outside normal working hours): +44 (0)1865 353907. Fax: + 44 (0)1865 353485. In the US, please contact: Journals Customer Service Department, Oxford University Press, 2001 Evans Road, Cary, NC 27513, USA. Email: jnlorders@oup.com. Tel (and answerphone outside normal working hours): 800 852 7323 (toll-free in USA/Canada). Fax: 919 677 1714. In Japan, please contact: Journals Customer Services, Oxford University Press, 4-5-10-8F Shiba, Minato-ku, Tokyo 108-8386, Japan. E-mail: custserv.jp@oup.com. Tel. +81 3 5444 5858. Fax. +81 3 3454 2929. Methods of payment. (i) Cheque (payable to Oxford University Press, to Oxford University Press, Cashiers Office, Great Clarendon Street, Oxford OX2 6DP, UK) in GB£ Sterling (drawn on a UK bank), US\$ Dollars (drawn on a US bank), or EU€ Euros. (ii) Bank transfer to Barclays Bank Plc, Oxford Group Office, Oxford (bank sort code 20-65-18) (UK), overseas only Swift code BARC GB 22 (GB£ Sterling to account no. 70299332, IBAN GB89BARC20651870299332; US\$ Dollars to account no. 66014600, IBAN GB27BARC20651866014600; EU€ Euros to account no. 78923655, IBAN GB16BARC20651878923655). (iii) Credit card (Mastercard, Visa, Switch or American Express).

Cambridge Journal of Economics (ISSN 0309-166X) is published bi-monthly by Oxford University Press, Oxford, UK. Annual subscription price is £621.00/\$1179.00/€931.00. *Cambridge Journal of Economics* is distributed in the USA by Central Mailing Services c/o UKP Worldwide, 1637 Stelton Road B1-2, Piscataway, NJ 08854. Periodicals postage paid at Piscataway, NJ and at additional entry points. US Postmaster: send address changes to *Cambridge Journal of Economics*, Oxford University Press, Central Mailing Services c/o UKP Worldwide, 1637 Stelton Road B1-2, Piscataway, NJ 08854.

Environmental and ethical policies

Oxford Journals, a division of Oxford University Press, is committed to working with the global community to bring the highest quality research to the widest possible audience. Oxford Journals will protect the environment by implementing environmentally friendly policies and practices wherever possible. Please see https://academic.oup.com/journals/pages/about_us/ethical_policies for further information on environmental and ethical policies.

The nature of heterodox economics revisited <i>Yannick Slade-Caffarel</i>	527
An empirical analysis of Minsky regimes in the US economy <i>Leila E. Davis, Joao Paulo A. de Souza and Gonzalo Hernandez</i>	541
An empirical contribution to Minsky's financial fragility: evidence from non-financial sectors in Japan <i>Hiroshi Nishi</i>	585
Capital intensity, unproductive activities and the Great Recession in the US economy <i>Lefteris Tsoulfidis and Dimitris Paitaridis</i>	623
Technical and structural change, and the fall in the manufacturing output–capital ratio in Mexico, 1990–2015 <i>Carlos A. Ibarra</i>	649
Collective wage bargaining and the role of institutional stability: a cross-national comparison of macroeconomic performance <i>Bernd Brandl and Christian Lybne Ibsen</i>	677
The structure and sustainability of China's debt <i>Lixin Sun</i>	695
Cyclical fluctuations and the structure of production <i>Giampaolo Garzarelli, Peter Lewin and Bill Tulloh</i>	717
Austerity and gender inequalities in Europe in times of crisis <i>Cristiano Perugini, Jelena Žarković Rakić and Marko Vladisanljević</i>	733
The problematic nature and consequences of the effort to force Keynes into the conceptual cul-de-sac of Walrasian economics <i>Mark Pernecky and Paul Wojcik</i>	769
Do not take peace for granted: Adam Smith's warning on the relation between commerce and war <i>Maria Pia Paganelli and Reinhard Schumacher</i>	785

Cyclical fluctuations and the structure of production

Giampaolo Garzarelli[✉], Peter Lewin and Bill Tulloh[★]

During the second half of 2006, Giampaolo Garzarelli was researching the yet unsorted Ludwig Moritz Lachmann Archives at the University of the Witwatersrand, Johannesburg, South Africa, to see if there was something of interest to consider for an institutional economics project on Lachmann. To the best of his recollections, the archival material at the time was contained in six or seven drawers of two old and rusty metal file cabinets of four drawers each. One of the most intriguing finds, in addition to Lachmann's eyeglasses, was an Italian offprint from *Annali di Statistica e di Economia*. The offprint is of a brief 1936 article co-authored with A. M. Neuman entitled 'Le fluttuazioni cicliche e la struttura della produzione'. The title of the present article is the English translation of the title of this Italian article. This Neuman–Lachmann article does not appear in the Appendix compiled by Tulloh that lists the bibliography of works by Lachmann collected in a well-known posthumous volume. We thus seem to be in the presence of a work that is at least unknown to English readers. This article serves three purposes. First, to offer some background on the authors, their situation and their work at that time; second, to put the article into context by relating it to Lachmann's broader work on capital; and, third, to offer a translation of this article from Italian to English.

Key words: Austrian business cycle theory, Average period of production, Ludwig M. Lachmann, Lachmann Archives, A. M. Neuman, Structure of production, Time
JEL classifications: B20, B25, B31, B53, D24, E30, E32

Manuscript received 14 May 2017; final version received 18 February 2018.

Address for correspondence: Giampaolo Garzarelli, DiSSE, Sapienza – Università di Roma, Piazzale Aldo Moro 5, 00185, Rome, Italy, and IPEG, University of the Witwatersrand, Johannesburg, South Africa; email: giampaolo.garzarelli@gmail.com

* Dipartimento di Scienze Sociali ed Economiche (DiSSE), Sapienza – Università di Roma (GG); Institutions and Political Economy Group (IPEG), University of the Witwatersrand (GG); Naveen Jindal School of Management, University of Texas at Dallas (PL); and Agoric (BT). We are grateful to many colleagues in three institutions on two continents for helping us to bring this project to conclusion. From Wits, we thank Ntibi Maepa, Elizabeth Marima, Shobhna Morar, Denise Nicholson, Maryna Van Den Heever and, especially, Paiki Muswazi (University Librarian), Jannie Rossouw (Head of the School of Economic and Business Sciences), Imraan Valodia (Dean of the Faculty of Commerce, Law and Management) and Zebulon Vilakazi (Deputy Vice-chancellor, Research and Post Graduate Affairs). From the University of Genoa, we thank Marcella Rognoni (*Direttore Biblioteca di Scuola di Scienze Sociali*). From Sapienza University of Rome, we thank Flaminia Pistoni (Head Librarian of the *Dipartimento di Scienze Sociali ed Economiche*) and Antonio Zucaro (Head Librarian of the *Istituto di Economia e Finanza*) for helping us with the consultation of *Annali di Statistica e di Economia*. We also thank participants at the WINIR Symposium on 'The legacy of Ludwig Lachmann: Interdisciplinary perspectives on institutions, agency and uncertainty', 11–13 April 2017, University of the Witwatersrand, Johannesburg, South Africa. Last but not least, we thank Hans Eicholz, Lorenzo Infantino, Chris Torr and the two anonymous referees for excellent input.

1. Introduction

During the second half of 2006—beginning almost certainly towards the end of May—Giampaolo Garzarelli spent quite some time conducting research at the (time still unsorted) Ludwig Moritz Lachmann Archives at the University of the Witwatersrand, Johannesburg, South Africa.¹ The motivation for the archival research was to see if there was something of interest about institutional analysis to consider for what eventually became [Foss and Garzarelli \(2007\)](#).

Garzarelli made a surprising find that had little to do with the original purpose of the archival research about institutional analysis in Lachmann's work: an offprint of a 1936 article that Lachmann co-authored with A. M. Neuman [Andrzej Marcin Neuman aka Andrzej Marcin de Neuman aka Andrew Martin de Neuman (1907–64)], an economist Garzarelli had never heard of.² The article—'Le fluttuazioni cicliche e la struttura di produzione'³—is in Italian, published in *Annali di Statistica e di Economia*, a journal of the (at the time Royal) University of Genoa, Italy. See the scanned title page of the offprint (Exhibit 1) and of the Contents page of the original volume (Exhibit 2),³ which further adds that the journal is a publication of the 'Laboratorio statistico [-] economico'.⁴

As we point out in the pages that follow, the article is related to another research program of Lachmann's: the theory of capital.⁵ Indeed, the title of the present article is the English translation of the Italian title of the Neuman and Lachmann article—henceforth NL.

NL does not appear in the Appendix compiled by Tulloh that lists the bibliography of works by Lachmann in the edited volume by [Lavoie \(1994\)](#). Thus, we seem to be in the presence of a work whose contents are at best not well known to English readers.⁶ Furthermore, as far as we know, this is only the second co-authored article by Lachmann, the other being [Lachmann and Snapper \(1938\)](#).

¹ The Lachmann Archives have since been sorted by the University of the Witwatersrand (Wits), and later also scanned by the IPEG thanks to generous support of SPARC funds from Wits and the efforts of Dr Nobantu Mbeki (Wits) and Mr Jason S. Hartford (formerly Wits, now a PhD student at the University of British Columbia). The scanned archives are available at both the Central Records and Archives of the University of the Witwatersrand <https://www.wits.ac.za/about-wits/central-records-and-archives/> (which also houses all the originals) and at IPEG <http://www.ipeg.org.za/>. At present, the scanned archives are not openly available online.

² In 2011–12, Roger Koppl helped Garzarelli track down some first information on Neuman.

³ We are in year XIV of the Fascist Era, which runs from 28 October 1935 to 27 October 1936.

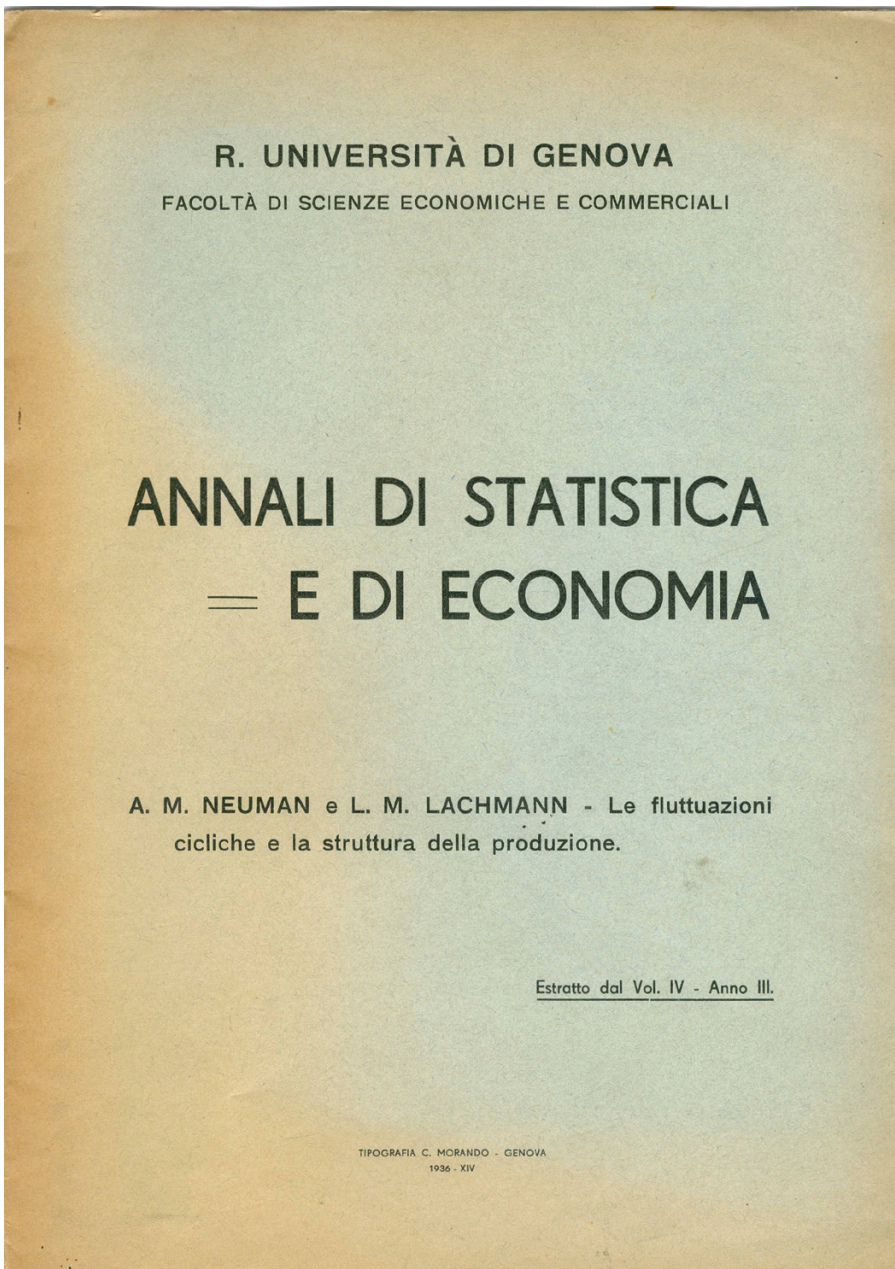
⁴ The Ulrichsweb database, under many different keyword combinations, did not return any information on the journal in terms of being active or ceased. But to the best of our knowledge, the journal was an annual first published in April 1933 under the auspices of the 'Laboratorio statistico – economico' with Prof. Federico Chessa as Editor, published by C. Morando, and ceased with Volume IX–X (1942) published by Arti Grafiche Bozzo & Coccarello – Genova, on 31 July 1943. There is no listing of an Editorial Board. Sometime between first and last issue, the Laboratorio changed its name to 'Laboratorio di scienze economiche'. As the scanned Contents page reveals, there are three other research articles in the volume containing Neuman–Lachmann, all dealing with time in economics: [Rosenstein-Rodan \(1936 \[1934\]\)](#), [Morgenstern \(1936\)](#) and [Fasiani \(1936\)](#). Notice also how the offprint refers to the Faculty of Economic and Commercial Sciences and the Contents page to the Faculty of Economics and Commerce and how 'fluttuazioni' is misspelled in the Contents page.

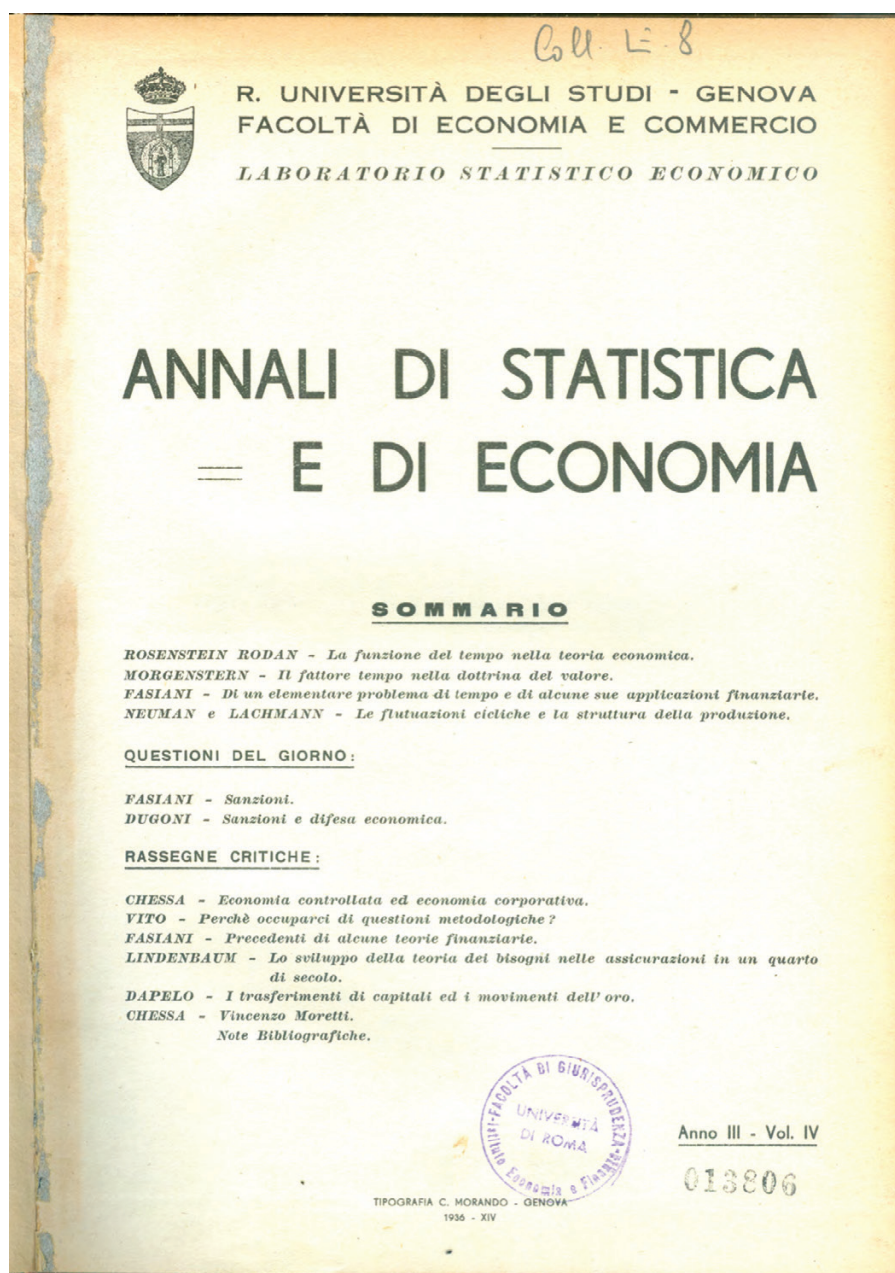
⁵ At least among Austrian economists, Lachmann is perhaps best known for his capital theory, which has been incorporated in much of modern Austrian analysis, as well as his insights in this context about the role of expectations and the entrepreneur.

⁶ A brief English summary of the content of the article, and indeed of the entire issue of *Annali* where it appears, can be found in the *Economic Journal* ('Recent periodicals and new books', 1936, p. 784).

The purpose of the present article is threefold. First, to offer some background on the authors, their situation and their work at that time; second, to put NL into broader context by relating it to Lachmann's broader work on capital and, at the same time, bring to light the neglected contributions of A. M. Neuman; and, third, to offer a translation of NL from Italian to English.

Exhibit 1: Cover page of the offprint





2. Historical context

The London School of Economics from 1933 to 1936 was an electric place, with students from all parts of Europe (and elsewhere) engaged in advancing a common theoretical approach out of the diverse strands of the Austrian, Lausanne and Marshallian traditions. The leading figures in this endeavour were Lionel Robbins and Friedrich

Hayek, especially through their jointly-run seminar. As [Howson \(2011, p. 250\)](#) notes, ‘1933–1936 were the peak years of the seminar for its intellectual excitement and its contribution to the development of economic theory’.

Lachmann arrived at the LSE in April 1933, pursuing a master’s degree under Hayek.⁷ A major research focus for Hayek during this period was the elaboration and defence of the Austrian business cycle theory (ABCT), originated by Ludwig von Mises building on the work of Eugen von Böhm-Bawerk and Knut Wicksell. [Hayek \(1935a\)](#) had first introduced the ABCT at LSE in a simplified form in his *Prices and Production*, drawing criticism from John M. Keynes, Piero Sraffa and others. In response, Hayek and his students sought to flesh out this simple model and defend the theory from criticism. Three areas in particular drew their attention: the issue of secondary depressions,⁸ the meaning of intertemporal equilibrium and the role of expectations, and the nature of capital and its role in the structure of production.⁹ Lachmann, in his early work, addressed all three concerns that would continue to influence his work throughout his career.

[Lachmann’s \(1935\)](#) master’s thesis on ‘Capital structure and depression’ explored the question of secondary depressions. He first examined the normal workings of the ABCT in which a downturn would lead to recovery and the re-establishing of equilibrium. He then sought to explain the factors that could upset this normal working of the ABCT and lead to a prolonged secondary depression.

Lachmann addressed the question of intertemporal equilibrium and expectations in his 1937 article, ‘Preiserwartungen und intertemporales Gleichgewicht’ [Price expectations and intertemporal equilibrium]. On 7 December 1933, [Hayek \(1939b\)](#) had delivered his famous Copenhagen lecture where he responded to Gunnar Myrdal’s criticism of his neglect of expectations. At issue was Hayek’s concept of intertemporal equilibrium, the role of expectations and assumptions about foresight. [Lachmann \(1937\)](#) argued that any discussion of price expectations must take into account the role of future markets, noting that many problems disappear with the introduction of intertemporal markets. Expectations matter most, he argued, when intertemporal markets are imperfect or do not exist at all, as in the case of the creation of new goods.

The question of the nature of capital and its structure would become central to Lachmann’s later work. However, Lachmann’s first article on capital theory and the trade cycle was a piece in Italian, co-authored with fellow LSE graduate, A. M. Neuman.

Neuman was a naturalised British economist of Polish background. He attended LSE where he received a BSc (Econ) degree in 1928. He then received a LLM degree from the University of Warsaw in 1929, before returning to LSE to pursue a doctorate, which he obtained in 1932 ([Grant, 1963, p. 386](#)). Routledge published his doctoral dissertation on the *Economic Organization of the British Coal Industry* in 1934 ([Neuman, 1934](#)).¹⁰

⁷ Lachmann received a doctorate from the University of Berlin in 1930 but was forced to leave Germany shortly after Hitler took power.

⁸ See [Hayek \(1939a\)](#) on the importance of secondary depressions.

⁹ Hayek ran a separate seminar on capital theory for his own students, starting in 1934–35 ([Howson, 2011, p. 250](#))—a seminar that Lachmann seems likely to have attended.

¹⁰ Neuman ‘read widely but his expertise was on the Polish coal industry and, after a scary wartime escape in peasant disguise from Poland, he aided the British ministries with his accumulated knowledge’ ([Weintraub, 1983, p. 221](#)).

Neuman, like Lachmann, became interested in Hayek's work on capital and business cycle theory, publishing several articles on the topic during the 1930s, in English (Neuman, 1936), Italian (Neuman, 1933, 1937a) and Polish (Neuman, 1937b).

Neuman's works today seem largely forgotten. Yet during the 1930s, he was active in the debates surrounding business cycle theory.¹¹ After the war, he became a Lecturer in Economics at University College in the South West of England, in Exeter, before leaving academia to work as a government economist. He died prematurely in 1964.

Neuman's first article on capital theory, which was published in Italian, criticised Alfred C. Pigou's concept of maintaining capital intact (Neuman, 1933). He argued that the physical measurement proposed by Pigou was untenable, and he suggested that the length of the average period of production (APP) provided a better basis for analysis. This provoked a response from the Italian economist Francesco Vito (1902–68), who challenged Neuman's use of the APP (Vito, 1933).

In their joint paper, Neuman and Lachmann defend the notion of the APP in response to a later article by Vito (1935) and to the arguments of his compatriot Marco Fanno (1878–1965) in Fanno (1931).¹² At the core of Neuman and Lachmann's criticism is the confusion introduced by treating the structure of production as several separate cycles, instead of treating it as a unified system.¹³

3. Capital and the structure of production, and the APP: analysis of the translated article

NL is a warning not to neglect 'the essentially economic aspect, that of time, on which the structure of production rests'. It reports that in recent correspondence between Professors Vito and Fanno, the latter had questioned the usefulness of the concept of 'structure of production' for the discussion of short-term changes and especially for business cycles.

As noted earlier, both Lachmann and Neuman were graduate students at the LSE where Hayek had risen to prominence because of his work repackaging the ABCT—the chief rival to the emerging Keynesian paradigm for explaining the Depression in the midst of which they found themselves (Hayek, 1935a). The ABCT, as originally conceived by Mises in 1912 (Mises, 1971 [1912]),¹⁴ and as presented with some variation by Hayek at the LSE in the early 1930s, emphasised the role of time in production and in informing production decisions.

¹¹ 'Undoubtedly the chief vehicle for graduate student interaction was the round-robin London–Oxford–Cambridge (L–O–C) seminars, organized at the London end by the painstaking Andrew de Neuman' (Weintraub, 1983, p. 221).

¹² Both Fanno and Vito were part of an active Italian language contribution to the interwar debates over business cycle theories developing along Austrian and Wicksellian lines. Gustavo Del Vecchio and Costantino Bresciani Turrone were also active in this debate. See Davanzati and Realfonzo (2001), Spiller (2010) and Nerozzi and Parisi (2011).

¹³ As Neuman (1936, p. 88) remarks in a related article: what 'is the relation between the average length of the structure of production and the liquidity of assets and units? I do not think that a greater or smaller liquidity of assets, or their greater specificity to a particular stage has any direct connection with the duration of the period of production. The whole discussion cannot be applied to the liquidity of a coordinating unit and to the length of the structure without falling into the dangerous trap of regarding the structure of production as a series of productive cycles instead of as one cycle. This trap includes already several Italian economists (Prof. Marco Fanno [1931], Prof. Francesco Vito [1935], etc.).'

¹⁴ Mises borrowed heavily from the monetary theory of Wicksell.

Mises and Hayek made use of the Austrian Theory of Capital—originated by Carl Menger (1976 [1871]), but greatly expanded and formalised by Böhm-Bawerk (1959). Böhm-Bawerk introduced the concept of the APP to capture the average amount of time taken in a production process (project or set of projects), and Hayek had used a very simplified and stylised version of this idea in the form of a triangle in his presentation.¹⁵

The ABCT suggests that many modern business cycles are induced by an expansion of the supply of money (money-credit) in the banking system that drives the rate of interest (or the interest-rate structure) down below its sustainable (variously equilibrium, natural) level. The rate of interest is both the cost of borrowing money and the rate at which future investment returns are discounted to yield the present-value of investment (production) projects. Thus, this unsustainable reduction in the interest rate—unsustainable because it is produced by the expansion of credit and not by an increase in real savings—artificially inflates the value of ‘longer’ investments relative to ‘shorter’ investments, and thus causes malinvestment. Because longer investments appear relatively more attractive, productive resources are moved towards them and away from shorter investments.¹⁶ When it becomes apparent that this production structure cannot be sustained, the value of these unsustainable investments falls. Yet, being that they are, at least in part, composed of specific durable equipment, these production resources cannot simply be reallocated back to the production of shorter sustainable projects. This underlying adjustment and readjustment process manifests in a credit-induced boom-bust cycle.

The designation of projects as longer or shorter refers to the APP. So when Fanno is questioning the usefulness of this concept, indeed of the more general concept of ‘structure of production’, Neuman and Lachmann are weighing in the context of Hayek’s theory. What is interesting is what this seems to reveal about Lachmann’s views at this time concerning the capital structure in general and the APP more particularly. Together with Neuman, Lachmann appears to be defending both the ABCT and the APP against the different criticisms of both Vito and Fanno. Moreover, it seems that in considering these different criticisms, Lachmann may have been alerted to the difficulties surrounding the concepts of aggregate capital and of the APP that he so decisively articulated in his later work (Lachmann, 1947, 1978 [1956]).

As noted above, Neuman had previously published an article in Italian in which he defended the concept of the APP against Pigou. Vito had published an answer to this and the article under examination is a further contribution to this debate, taking account of an article by Fanno. Given that Neuman’s name appears first, and given

¹⁵ To add further context to this, we should note that concurrently Hayek was working intensively on this problem, producing articles, some of which were collected in Hayek (1939c) and all of which can be seen as leading up to his culminating work on capital (Hayek, 1941). In these works, Hayek had already moved away from the APP towards a more sophisticated and complex incorporation of time into the conception of the structure of production and the influence of interest-rate changes upon it. Instead of his simple triangle, he used a similar construct to depict investment (input) and output *functions*. See particularly Hayek (1934). This set off the famous Hayek-Knight debate as focus shifted to the nature of capital itself. In addition, as noted, Neuman had in 1933 criticised Pigou on his view of maintaining capital intact. Pigou’s work also caught Hayek’s attention and was a subject of an article (Hayek, 1935b) and an ensuing debate with Pigou in 1941 after the publication of Hayek (1941).

¹⁶ In Wicksell’s work, the process is set in motion by an expansion of money-credit that reduces the money-rate below the ‘natural-rate’, the rate that equilibrates Saving and Investment. The natural-rate is sustainable, because it is based on the fundamental preferences of consumers-savers and producer-investors.

this context of the debate, it is likely that Neuman is the lead author and is pushing his particular point of view on the APP. This is the time that Lachmann was beginning to work more on aspects of capital theory in relation to economic cycles—a road that would take him to a broader consideration of expectations, investment, entrepreneurship and production, more generally. At this stage, it appears he is content to defend, along with Neuman, the APP construct that he later came to consider more critically, on which more below.¹⁷

According to NL, Fanno objects to the use of APP as an aggregate concept and points out that, from a microeconomic perspective, there are many such APPs. In discussing this, Neuman and Lachmann are led to a consideration of the technical conditions of production and the claim that in the short run, since these technical conditions are fixed, the APPs will not vary. NL points out that, even assuming that this is true, it still does not follow that the aggregate APP cannot vary, being that the aggregate is a weighted average of the components. When the weights change, the aggregate changes and when the interest rate falls, the weights shift towards projects of longer duration—essentially the same point is made in Hayek (1935a). Notably, projects of longer duration include both longer duration production goods and consumption goods, like houses and automobiles. In this description, NL makes use of the notion of stages of production characteristic of Hayek's triangle, where a move towards earlier stages of production is synonymous with the move towards longer duration investment projects.¹⁸

Neuman and Lachmann downplay the importance of the 'technical rigidity' of individual production projects in suggesting that they may not be as fixed as might be thought. For one thing, non-specialised labour can move freely between many different types of projects.¹⁹ For another, some production goods are more specific in their possible uses than others, that is to say, the production structure is characterised by what Lachmann (1978 [1956], p. 2, and generally Chapter 1) later called 'multiple-specificity' regarding production goods.²⁰ And we also find NL considering the advent of both new production goods and techniques and new consumption goods, a hint of conceptions of a truly dynamic economy.

So NL defends Vito against Fanno's criticisms regarding the microeconomics of the capital structure and argue that Vito is correct in suggesting that it is the production structure as a whole that is both relevant and useful in discussing business cycles. And they take issue with Vito's suggestion that the APP may be difficult to construct as an aggregate of all the micro periods of production, saying that the monetary values of these projects can be used, specifically that in a monetary economy there exists 'the possibility to reduce all our results to a common monetary denominator' and that doing so would be 'scientifically correct'. This and other related statements throughout the article suggest the ubiquitous confusion that has plagued discussions

¹⁷ Lachmann may have been alerted to the importance of this concerning capital in general by the discussion of the importance of focusing (in the context of a discussion about the business cycle) on the capital structure as a whole rather than on segments of it. There is one cycle, not a number separable micro-cycles.

¹⁸ An equivalence recently disputed (Lewin and Cahanosky, 2018a).

¹⁹ This observation is noteworthy for its recognition of the fact that labour, just like capital, can be specific to certain production tasks, a point that Lachmann did not use in his later capital theory, but perhaps should have.

²⁰ Could this be one of the triggers for the development of Lachmann's later description of the capital structure as being composed of many multi-specific, heterogeneous production goods?

of capital theory over the years, namely the attempt to measure physical quantities in terms of monetary values. Lachmann later realised that the APP was a hopelessly logically inconsistent concept in the form that it was inherited from Böhm-Bawerk, and also as recast by Hayek (1935a), as Hayek himself realised. In both treatments, there is a confounding of quantities and values starting with the fact that the concept of interest is inescapably a value concept. Both Böhm-Bawerk and Hayek, for this reason, were reduced to using only simple interest, and not, as would be correct, compound interest. Furthermore, the attempt to construct an APP in terms of physically weighted units of time is doomed to fail because the significance of those physical weights can only be gauged in value terms. (So, for example, Hayek's triangle makes use of physical units of labour to weigh the time involved in any production project. But those physical units of labour will not, in the general case, be homogeneous. This ironically pushed Hayek's rendition of the ABCT into an uncomfortable Ricardian-type labour-theory-of-value format.) This is something that Lachmann forcefully exposed in later years in his published work and in his university lectures. So it is perhaps surprising to find him here, together with Neuman, committing those basic errors that he was later to expose in the work of the neo-Ricardians and neoclassicals. It is, again, perhaps here that these errors first began to be seen by him for what they were.

By the time he came to write his book on *Capital and Its Structure* (1978 [1956]), Lachmann had rejected the APP construct.

We ask what typical changes the capital structure undergoes as capital is accumulated. Böhm-Bawerk's answer was briefly, that the 'period of production' increases and causes an increase in output per man-hour. We cannot accept this answer.

... It seems to us that the root of his [Böhm-Bawerk's] failure lies in this inconsistency. Starting from a view of the capital problem which is fundamentally sound, he failed when he tried to introduce the incongruous element of single-dimension measurement into a theory conceived in terms of heterogeneous products (Lachmann, 1978 [1956], p. 73).

Where Lachmann is most explicit in his rejection of the APP is in his 1959 article on Böhm-Bawerk:

It may however be advisable to anticipate already two of our main points, from which we take the notion that while the idea of the 'average period of production' must be given up, the far more essential concept of roundabout production can most certainly be secured. Believing then that no quantitative specification of capital is possible in a progressive economy, we have set out from the view that capital structure is a meaningful order of capital goods. (Lachmann, 1959, p. 236, our translation).

He later concludes that capital 'formation is not a purely quantitative process, but requires changes in the composition of the flows of goods and in the complementarity of the categories of capital' (Lachmann, 1959, p. 243, our translation).

In the years after Neuman and Lachmann published their article, Lachmann proceeded to publish numerous articles on capital, investment and expectations (Lachmann, 1938, 1939, 1941, 1943, 1945, 1947, 1948). The 1947 and 1948 articles suggest that his theory of capital was close to being fully worked out. He had arrived at a perspective that perhaps was only vaguely visible to him at the time he and Neuman wrote their article.

Finally, it may be worthwhile to note that three years after this article was published, John Hicks (1939), in his *Value and Capital*, clearly articulated the problems with Böhm-Bawerk's APP and, astoundingly, offered a solution in the form of a

money-value-weighted APP. He called this construct the average period (AP), being the average amount of time for which one has to wait to earn a dollar from the investment in question. The identical concept was discovered by the financial actuary (and institutional economist) [Frederick Macaulay in 1938](#), and has been used by financial practitioners ever since. In finance, it is called Duration. Neither the Austrians, nor later Hicks himself, picked up on this concept, and the persistent and futile attempt to use money values to measure physical quantities of capital became the root of much vigorous and acrimonious debate, most particularly evident in the debate of the Cambridges from the 1950s to the 1980s, a debate with echoes still to this day. When Neuman and Lachmann refer in this article to a ‘common monetary denominator’ as a means of rendering the APP consistent and intelligible, they could not have foreseen Hicks’s contribution along those lines, but if Lachmann had taken note of it when it appeared he surely could have incorporated it into the significant contributions of his capital theory.²¹

For these reasons, this newly discovered article is a fascinating window into Lachmann’s possible mindset before the ingredients of his most significant contributions had taken form.²²

4. Translation: ‘Cyclical fluctuations and the structure of production’ by A. M. Neuman and L. M. Lachmann

In the discussions on the theory of capital, there is a grave danger from the intrinsic seduction of overestimating the purely technical aspect of the problem and of, simultaneously, neglecting the essentially economic aspect, that of time, on which the structure of production rests.

In a recent article, ‘La teoria pura della moneta e i cicli economici’ [The pure theory of money and economic cycles], Prof. [Vito \[1935\]](#) cites correspondence that he had with Prof. Marco Fanno [[Vito, 1935](#), p. 108] in which the latter raises serious doubts about the usefulness of the concept of ‘structure of production’ for the study of short-term changes, and, particularly, about its applicability to the study of cyclical fluctuations. He denies that upturns and downturns are expressions of the tendency to lengthen or shorten the structure of production. He asserts that the phenomena, which in reality are observed during the industrial cycle, give us no right to draw such conclusions, because the changes in the process of production are determined by progress in productive technique, which in reality changes very slowly. Since Prof. Vito reports Prof. Fanno’s opinion without any critical comment, it is legitimate to think that he shares that opinion. However, it can be shown that while Prof. Fanno’s argument is, within the limits of its premises, completely logical and is in accord with his entire theory, Prof. Vito’s adherence seems, at least in part, to contradict the rest of his article.

²¹ For more on AP and Duration, see [Cachanosky and Lewin \(2014, 2016\)](#) and [Lewin and Cachanosky \(2018a, 2018b\)](#). Also, note that, alone among the post-Böhm-Bawerkian Austrians, Mises had a financial (monetary) conception of capital, and, as a result, never participated in any ‘controversies’. See [Braun et al. \(2016\)](#).

²² For consistency in citation style, in the translation presented in the next section the original footnotes of NL have been converted into parenthetical citations, but in square brackets. It is also worth noting that not always is the Italian of the original NL text correct.

As Prof. Vito [1935, p. 106 ff.] himself has noted, Prof. Fanno [1931] speaks of many production cycles: ‘the production cycles of the various goods’. On the other hand, it appears that Prof. Vito is perfectly aware of the essential difference between this conception and that of the Austrian School when he writes that ‘the notion of the length of the productive cycle is not, as in Fanno’s theory, applied to the different processes of production of the various goods that reach the consumer, but to the entire productive apparatus, as considered in its vertical structure’ [Vito, 1935, p. 107]. The essential difference between the two authors’ conceptions clearly emerges in such a fashion, and while we are in complete agreement with Vito on this point, we cannot but find it somewhat strange that, notwithstanding the fundamental difference in their premises, both authors reach identical conclusions and that Prof. Vito approves of Prof. Fanno’s verdict on the Austrian theory of the industrial cycle.

It can never be stressed enough that there is an enormous difference between considering the problems of the cycle by studying the structure of production as a whole or by limiting ourselves to investigating the distinct cycles of the various goods. This latter procedure forces us to confront the frictions and technical difficulties that one finds when trying to adapt individual methods of production to the changed requirements that emerge during the cycle. Considering the nature of the technical rigidity connected to each process of production once started, that is, the fact that the coefficients of production are fixed and that the factors are specialised within the short term, it follows that the possibility of readjustment during such periods is in such a way made impossible. And it is completely legitimate to conclude that all that one can say is that during the upturn of the cycle we observe ‘an expansion of the plants to increase production of many goods, but with production processes of the same length as the previous ones. In the downturn, the creation of new plants stops’ [Vito, 1935, p. 108].

The perspective is, however, completely different if we consider the problem from the point of view of the structure of production as a *whole*. What we are interested in considering now is the relationship between the time during which the factors of production are employed, and the amount of production resources available for consumption goods. Moreover, we compare the productivities of different structures of production. Prof. Vito seems to favour negating this possibility when in another article [Vito, 1933, p. 677 ff.], while criticising Böhm-Bawerk, he writes that it is not ‘scientifically correct’ to measure the productivity of the various factors employed to produce not ‘a unit of production’, but various goods. This is true if Prof. Vito considers physical units, but since in an economy we always have the possibility to reduce all our results to a common monetary denominator, such procedure would be, in our case, not ‘devoid of meaning, but rather scientifically correct’.

But let us now examine the connection between the ‘structure of production as a whole’²³ and the problems of the industrial cycle. The technical rigidities in one *part* have little to do with the possibility of altering the structure as a *whole*, to the extent that it is possible to modify the production of one type of good at the expense of another.

In the case where only a certain number of goods is produced in certain quantities, the production methods, naturally, cannot be changed as one likes; but if completely

²³ Here, Neuman and Lachmann write ‘*unica struttura di produzione*’, which literally would translate as the ‘unique’ or, maybe more precisely, ‘sole’ structure of production; we think that by ‘*unica*’, they actually mean structure as a ‘whole’ in juxtaposition to breaking down the structure of production into separate ones.

new goods are produced, then the entire structure of production is altered, and the technical difficulties are not a major obstacle, except for the supply of the factors that are already employed. Assuming as given both consumers' tastes and technical knowledge, the interest rate determines the length of the structure. For this reason, we cannot accept the opinion that technical rigidities must constitute a major obstacle to variations in the structure of production, both in the short and in the long periods. Since the same arguments apply in the case where no new goods are produced, but the quantity of the existing goods brought to the market is changed, there seems to be no reason to attribute too much importance to the technical difficulties of moving from one production method to another. And when the composition of total production can be varied in the short term, such difficulties seem to a great extent immaterial.

The same occurs in the business cycle.

In fact, it is known that cyclical fluctuations hit different sets of industries with different intensity. Empirical observations corroborate that an increase in the production of all goods is certainly not the only distinctive sign of a boom.²⁴ This is well known, and it was generally admitted by economists, after the careful research of Prof. Spiethoff, that a constant characteristic of a boom is an increase in the production of durable goods and of investment goods (houses, farms, ships, automobiles, iron, steel, coal, etc.). If a house is built or a machine is purchased, one exchanges present income for future income and the structure of production is thus extended. Some factors are invested so that their final products are not used for immediate consumption, but rather for deferred consumption. There is no doubt that this type of development, as a trend that depends on a low (monetary) rate of interest, is normally prevalent at the end of a depression and in the first phases of a recovery. Concerning the trend of production of durable goods and of investment goods, it seems therefore legitimate to us to infer that the high phase of a business cycle and the tendency for the average duration of the structure of production to rise, end up coinciding.

On the other hand, the shortening of the structure, which always accompanies the end of the upturn and the following period, seems in the first instance to offer the possibility of much more serious objections. In fact, one cannot support the claim that the lack of liquid capital, which begins to make itself known at the peak of the upturn, leads to a variation of the technical means of production in existing plants, nor that shorter production processes are substituted in the production of the same goods. But this is not what is under discussion.

What matters most in this regard is the beginning of new processes or, on the other hand, that the amortisations that are subtracted from some types of production are then destined to different uses. Observation teaches that during a depression, the investment activity drops, in relative terms, much more than consumption. The first stages (production of raw materials) suffer considerably more than the last (consumption goods industries), and the stocks of merchandise gradually decrease as the depression continues. From this it follows that, in relative terms, there is a greater number of unemployed factors in the first phases compared to the final ones. This leads, *ipso facto*, to having, on average, all factors of production employed for less time.

²⁴ At the end of this sentence, there is '(boom)', which we omit since context suggests that it is a typo of 'boom'. Could reporting this English word in parentheses in the Italian text imply that NL is a translation from English?

But let us now consider whether there is an advantage to adopting Prof. Fanno's procedure of substituting many cycles of production of various goods with a unique and comprehensive structure of production. It seems to us that, at least as regards the analysis of business cycles, this first attempt is surely less successful. Besides the difficulty of a clear definition of each good distinct from any other, it does not give us a concept of an organic and functional unity of all the goods in the system, nor does it teach us anything about the interconnections of the different parts of production; it includes a great number of average periods that cannot be easily combined into a general period; neither does it indicate any kind of concatenation among the various interest rates and the cycles of the various goods; nor does it permit to account for the variations in the quantities produced of the different goods, in that it does not leave room for the consideration of relative changes.

All the various sectors of production are connected to each other by the flow of free capital, which, in part, flows from savings and in part periodically frees itself in the form of amortisation. Such dependence is clearly visible in the representation of a single structure of production. Yet, when our system is divided into a series of independent cycles of various goods, it is eclipsed by the underlying detail and seems devoid of any explanatory value. In relation to reinvesting the amortisation funds, they, certainly, can be channelled into various directions, and it is not necessary for them to substitute for old capital. In many cases, when the technical conditions do not render necessary such substitutions, the old plants are kept and are not replaced; in other cases, the capital is changed and the amortisation funds are applied to new types of investments, which become part of the new, shorter, structure of production inside the entire economic system. All these interrelations among the various sectors of production, even if extremely important for the problem of the business cycle, cannot be explained if one considers separate production cycles for each good.

If we explain in this fashion the phenomenon of interconnectedness that exists among the various sectors of production and that is accomplished through the reintegration of capital, it naturally follows that, in as much as the technical substitution of one method of production with another can present some difficulties, as highlighted by Prof. Marco Fanno and Prof. Vito, the cycle, in its diverse phases, implies a tendency to substitute the demand for one type of (consumer) good for the demand for another type, as a result of the transfer of free capital from one production sector to another. If this is the case, it does not seem correct to attribute a predominant importance to the lack of technical flexibility of existing plants, which is but one of many elements that determines the position [in the overall length of the structure of production].²⁵

Similarly, if the technical adjustments of production of every single good were to be such as to exclude the possibility of variations in the short periods, it would still undoubtedly be true that the variations in demand for different categories of goods, which manifest during the business cycle, become concrete in investments for different periods. This obviously presupposes that certain classes of factors can move freely from one industry to another (as for example is the case of non-specialised labour, which can move from industries where investment goods are produced to industries where consumption goods are produced). Thus, if all factors were 'non-competing groups'

²⁵ The original sentence ends with 'position', but the meaning is unclear, also in the Italian original, without the words in brackets that we add.

because they are employed in the different industries, the cycle could not originate at all, as recent Swedish contributions on the theory of economic cycles have shown.

When one speaks of the influence of the business cycle on the structure of production one highlights the effect that derives from the period of time during which, on average, the factors are invested: that is, the average period of production expressed in terms of time (years, months, days, hours, etc.). Prof. Vito shows himself rather sceptical about the possibility of comparing the average length of different structures of production and reveals himself to favour considering it as ‘a purely formal conception, not susceptible to the direct application of concrete economies’ [Vito, 1933, p. 680]. Without getting ourselves into an additional discussion around the usefulness of the concept of the length of the structure, it must be clearly specified how measurement can occur. In measuring certain quantities, it is always possible to express the relation among different magnitudes, besides with standard numerical measures, in terms of ‘greater’, ‘lesser’ and ‘equal’ (just as is done in the ‘measurement’ of utility). In this fashion, it is possible to order various structures of production according to the different *total* length of production during which factors are invested. The longest will be the one whose factors must remain invested for a longer period of time before consumption goods become available. Analogously, if in one case the length of the structure and the quantity of employed factors is greater than in another case, and if additionally production is greater in the latter case, one will be forced to conclude that the *average* period is in the latter case considerably longer than the first.

If this were to be denied, it would be difficult to understand in what way the concept of periods of production can have any meaning.

London School of Economics and Political Science
(University of London)

Bibliography

An asterisk indicates that the work is cited in NL.

- Böhm-Bawerk, E. von. 1959. *Capital and Interest*, vol. 1–3. South Holland, Libertarian Press.
- Braun, E., Lewin, P. and Cachanosky, N. 2016. Ludwig von Mises’s approach to capital as a bridge between Austrian and institutional economics, *Journal of Institutional Economics*, vol. 12, no. 4, 847–66 (December)
- Cachanosky, N. and Lewin, P. 2014. Roundaboutness is not a mysterious concept: a financial application to capital theory, *Review of Political Economy*, vol. 26, no. 4, 648–65 (October)
- Cachanosky, N. and Lewin, P. 2016. Financial foundations of Austrian business cycle theory, *Advances in Austrian Economics*, vol. 20, 15–44
- Davanzati, G. F. and Realfonzo, R. 2001. An overinvestment (but anti-Austrian) explanation of the turning points of the cycle: Italian contributions of the early 20th century, *History of Economics Review*, vol. 33, no. 1, 17–32 (January)
- *Fanno, M. 1931. Cicli di produzione, cicli di credito e fluttuazioni industriali [Production cycles, credit cycles, and industrial fluctuations], *Giornale degli Economisti e Rivista di Statistica*, vol. 71, no. 5, Fourth Series, Year 46: 329–70 (May)
- Fasiani, M. 1936. Di un elementare problema di tempo e di alcune sue applicazioni finanziarie [About an elementary problem of time and some of its financial applications], *Annali di Statistica e di Economia*, vol. 4, no. 3, 67–114
- Foss, N. and Garzarelli, G. 2007. Institutions as knowledge capital: Ludwig M. Lachmann’s interpretative institutionalism, *Cambridge Journal of Economics*, vol. 31, no. 5, 789–804 (September)
- Grant, J. 1963. *Directory of British Scientists*. London, Ernest Benn Ltd.

- Hayek, F. A. 1934. On the relationship between investment and output, *Economic Journal*, vol. 44, no. 174, 207–31 (June)
- Hayek, F. A. 1935a. *Prices and Production*, London, Routledge and Kegan Paul. Revised edition
- Hayek, F. A. 1935b. The maintenance of capital, *Economica*, New Series, vol. 2, no. 7, 241–76 (August)
- Hayek, F. A. 1939a. The present state and immediate prospects of the study of industrial fluctuations, Chapter 6, pp. 171–182 in Hayek *Profits, Interest and Investment, and Other Essays on The Theory on Industrial Fluctuations*, London, Routledge & Kegan Paul.
- Hayek, F. A. 1939b. Price expectations, monetary disturbances, and malinvestments, Chapter 4, pp. 135–156 in Hayek *Profits, Interest and Investment, and Other Essays on The Theory on Industrial Fluctuations*, London, Routledge & Kegan Paul
- Hayek, F. A. 1939c. *Profits, Interest and Investment, and Other Essays on the Theory on Industrial Fluctuations*, London, Routledge & Kegan Paul
- Hayek, F. A. 1941. *The Pure Theory of Capital*, London, Macmillan
- Hicks, J. 1939. *Value and Capital*, Oxford, Oxford University Press
- Howson, S. 2011. *Lionel Robbins: A Life in Economics, Government and the Arts*, Cambridge, Cambridge University Press
- Lachmann, L. M. 1935. Capital structure and depression, Master's thesis, London School of Economics
- Lachmann, L. M. 1937. Preiserwartungen und intertemporales Gleichgewicht [Price expectations and intertemporal equilibrium], *Zeitschrift für Nationalökonomie/Journal of Economics*, vol. 8, no. 1, 33–46.
- Lachmann, L. M. 1938. Investment and costs of production, *American Economic Review*, vol. 28, no. 3, 469–81 (September). Reprinted in Lavoie (1994): 42–56
- Lachmann, L. M. 1939. On crisis and adjustment, *Review of Economics and Statistics*, vol. 21, no. 2, 62–8 (May). Reprinted in Lavoie (1994): 73–83
- Lachmann, L. M. 1941. On the measurement of capital, *Economica*, New Series, vol. 8, no. 32, 367–77 (May). Reprinted in Lavoie (1994): 91–106
- Lachmann, L. M. 1943. The role of expectations in economics as a social science, *Economica*, New Series, vol. 10, no. 37, 12–23 (February).
- Lachmann, L. M. 1945. A note on the elasticity of expectations, *Economica*, New Series, vol. 12, no. 48, 248–53 (November). Reprinted in Lavoie (1994): 124–30
- Lachmann, L. M. 1947. Complementarity and substitution in the theory of capital, *Economica*, New Series, vol. 14, no. 54, 108–19 (May)
- Lachmann, L. M. 1948. Investment repercussions, *Quarterly Journal of Economics*, vol. 62, no. 5, 698–713 (November). Reprinted in Lavoie (1994): 131–46
- Lachmann, L. M. 1959. Böhm-Bawerk und die Kapitalstruktur [Böhm-Bawerk and the capital structure], *Zeitschrift für Nationalökonomie/Journal of Economics*, vol. 19, no. 3, 235–45.
- Lachmann, L. M. 1978 [1956]. *Capital and Its Structure*, 2nd ed., Mission, Sheed, Andrews and McMeel
- Lachmann, L. M. and Snapper, S. 1938. Commodity stocks in the trade cycle, *Economica*, New Series, vol. 5, no. 20, 435–54 (November)
- Lavoie, D. (ed.) 1994. *Expectations and the Meaning of Institutions: Essays in Economics by Ludwig Lachmann*, London, Routledge
- Lewin, P. and Cachanosky, N. 2018a. The average period of production: the history of an idea. *Journal of the History of Economic Thought*, vol. 40, no. 1, 81–98
- Lewin, P. and Cachanosky, N. 2018b. Value and capital: Austrian capital theory, retrospect and prospect. *Review of Austrian Economics*, vol. 31, no. 1, 1–26
- Macaulay, F. R. 1938. *Some Theoretical Problems Suggested by the Movements of Interest Rates, Bond Yields and Stock Prices in the United States since 1856*, New York, National Bureau of Economic Research
- Menger, C. 1976 [1871]. *Principles of Economics*, trans. James Dingwall and Bert F Hoselitz, New York, New York University Press
- Mises, L. von. 1971 [1912]. *The Theory of Money and Credit*, Irvington, Foundation for Economic Education
- Morgenstern, O. 1936. Il fattore tempo nella dottrina del valore [The time factor in the theory of value], *Annali di Statistica e di Economia*, vol. 4, no. 3, 31–65. Translated from 'Das Zeitmoment

- in der Wertlehre', *Zeitschrift für Nationalökonomie/Journal of Economics*, vol. 5, no. 4, 433–58 (September)
- Nerozzi, S. and Parisi, D. 2011. 'Introduction' to the special issue on 'Italian economists and the great depression. The Journal *Rivista Internazionale di Scienze Sociali* (1929–1940)', *Rivista Internazionale di Scienze Sociali*, vol. 119, no. 3/4, 237–67 (July–December)
- Neuman, A. M. 1933. Osservazioni sul concetto di 'capitale inalterato' e sulla recente formulazione del Prof. Pigou [Observations on the concept of 'intact capital' and on the recent formulation by prof. Pigou], *Rivista Internazionale di Scienze Sociali e Discipline Ausiliarie*, vol. 3, no. 4, 670–76 (September)
- Neuman, A. M. 1934. *Economic Organization of the British Coal Industry*, London, Routledge
- Neuman, A. M. 1936. The doctrine of liquidity, *Review of Economic Studies*, vol. 3, no. 2, 81–99 (February)
- Neuman, A. M. 1937a. Gli economisti svedesi e il pensiero economico inglese [Swedish economists and English economic thought], *Rivista Internazionale di Scienze Sociali*, vol. 8, no. 1, Third Series, Year 45: 42–55 (January)
- Neuman, A. M. 1937b. Czysta teoria plynności kapitału [Pure theory of capital liquidity], *Ekonomista* [Poland]
- Neuman, A. M. and Lachmann, L. M. 1936. Le fluttuazioni cicliche e la struttura della produzione, *Annali di Statistica e di Economia*, vol. 4, no. 3, 117–23. Translated here as 'Cyclical fluctuations and the structure of production'
- Rosenstein-Rodan, P. N. 1936 [1934]. La funzione del tempo nella teoria economica, *Annali di Statistica e di Economia*, vol. 4, no. 3, 1–29. Translated from 'The role of time in economic theory', *Economica*, New Series, vol. 1, no. 1, 77–97 (February)
- Spiller, C. N. 2010. Business cycles in the Italian tradition, pp. 21–44 in M.-A. Galindo Martín and C. N. Spiller (eds), *Issues in Economic Thought*, New York, Nova Science Publishers
- Economic Journal, The 1936. Recent periodical and new books, vol. 36, no. 184, 773–806
- *Vito, F. 1933. La nozione di lunghezza media del processo produttivo [The notion of the average length of the production process], *Rivista Internazionale di Scienze Sociali e Discipline Ausiliarie*, vol. 4, no. 5, 677–80 (September)
- *Vito, F. 1935. La teoria pura della moneta e i cicli economici [The pure theory of money and economic cycles], *Annali di Statistica e di Economia*, vol. 3, no. 2, 87–109
- Weintraub, S. 1983. A Jevonian secessionist: a mutiny to enhance the economic bounty?, *Banca Nazionale del Lavoro Quarterly Review*, vol. 36, no. 146, 215–34, <http://ojs.uniroma1.it/index.php/PSLQuarterlyReview/issue/view/626> [date last accessed 5 April 2017]. Reprinted in *Journal of Post Keynesian Economics* 1985, vol. 7, no. 4, 510–29 (Summer)

NOTES TO CONTRIBUTORS

Editorial communications should be sent to the Managing Editor by email: cje@hermes.cam.ac.uk. Articles should be submitted online at <http://mc.manuscriptcentral.com/cje>. Submissions should not normally exceed 7500 words and should be prefaced by an abstract of no longer than 150 words, together with up to five keywords, three JEL classifications and an address for correspondence. For further information on manuscript submission please go to 'Instructions to Authors' at https://academic.oup.com/cje/pages/General_Instructions.

SUBMISSION POLICY

The Cambridge Journal of Economics, founded in the traditions of Marx, Keynes, Kalecki, Joan Robinson and Kaldor, welcomes contributions from heterodox economics as well as other social science disciplines. Within this orientation the journal provides a focus for theoretical, applied, interdisciplinary, history of thought and methodological work, with strong emphasis on realistic analysis, the development of critical perspectives, the provision and use of empirical evidence, and the construction of policy. The Editors welcome submissions in this spirit on economic and social issues including, but not only, unemployment, inflation, the organisation of production, the distribution of the social product, class conflict, economic underdevelopment, globalisation and international economic integration, changing forms and boundaries of markets and planning, and uneven development and instability in the world economy.

Use of mathematics

Authors are asked to use mathematics only when its application does not compromise realistic analysis. When mathematics is used, the major steps in the argument and the conclusions should be made intelligible to a non-mathematical reader. Authors should put the mathematical parts of their argument into an appendix. In the case of empirical articles, authors will normally be expected to make readily available to interested readers a complete set of data as well as details of any specialised computer programs used.

Layout

Manuscripts must be typed in Journal style (see a recent issue), double spaced (including footnotes and references), with a margin of at least 1.5" on the left-hand side. Footnotes should be kept to a minimum, indicated by superscript figures in the text, and collected on a single page placed at the end of the manuscript. Please do not use the automatic footnote feature of your word processing program. Tables and figures should be attached on separate sheets at the end of the manuscript and their position indicated in the text. Citations in the text should use the Harvard System of short references (e.g. Isenman, 1980, pp. 66–7; Brown, 1975A, 1993B) with a full alphabetical list at the end in the following style:

Isenman, P. 1980. Basic needs: the case of Sri Lanka, *World Development*, vol. 8, no. 3, 237–58

Myrdal, G. 1939. *Monetary Equilibrium*, London, Hodge

Phillips, A. W. H. 1953. 'Dynamic Models in Economics', PhD Thesis, University of London

Advance Access Citation

Papers published in Advance Access are citeable using the DOI. An example of an Advance Access citation is given below:

Brammer, S. and Millington, A. 2005. Profit maximisation vs. agency: an analysis of charitable giving by UK firms, *Cambridge Journal of Economics*, doi:10.1093/cje/bei036.

The same paper in its final form would be cited:

Brammer, S. and Millington, A. 2005. 'Profit maximisation vs. agency: an analysis of charitable giving by UK firms', *Cambridge Journal of Economics*, vol. 29, no. 4, 517–34

Comments on published articles

Before submitting a comment (normally no more than 1500 words) on any article published in the Journal, a copy of the comment should be sent to the author of the original article with a request they respond to any points of possible misunderstanding. The comment should not be submitted for publication before this response has been received unless the original author does not reply within a reasonable time.

Copyright and Permissions

It is a condition of publication in the Journal that authors grant an exclusive licence to the Cambridge Political Economy Society. This ensures that requests from third parties to reproduce articles are handled efficiently and consistently and will also allow the article to be as widely disseminated as possible. As part of the licence agreement, authors may use their own material in other publications, provided that the Journal is acknowledged as the original place of publication and Oxford University Press as the publisher in writing. For information on how to request permissions to reproduce articles/information from this journal, please visit www.oxfordjournals.org/jnls/permissions.

Advertising

Inquiries about advertising should be sent to Linda Hann, Oxford Journals Advertising, 1 Fernham Road, Shellingford, Oxfordshire, SN7 7PU. Email: lindaj.hann@btinternet.com. Tel: +44 (0)1367 710022 (please call during UK working hours only).

© Cambridge Political Economy Society 2019

All rights reserved; no part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without prior written permission of the Publishers, or a licence permitting restricted copying issued in the UK by the Copyright Licensing Agency Ltd, 90 Tottenham Court Road, London W1P 9HE, or in the USA by the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

Typeset by Newgen Knowledge Works Pvt. Ltd., Chennai, India

Printed by Bell & Bain, Glasgow, UK