ISSN 1881-6436

DISCUSSION PAPER SERIES

No. 07-03

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June 2007

For

HETSA Conference 2007

The University of Queensland, Australia

11-13 July, 2007

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15 June 2007

Preliminary version 1.5
Not to be quoted

Key Words: Frederic Lavington, entrepreneur, business risks, trade cycle, industrial organization, view of market, the Marshallian tradition

JEL Classification: B10, B31, L16

Abstract
Lavington's insight on capitalism can be understood as a threefold-layer structure, at the core of which is an entrepreneur. This structure comprises the following: (1) micro-layer, related to the demand for money (pure theory), (2) macro-layer, related to the trade cycle (reality) and (3) meso-layer, related to industrial organization (ideal). The first is concerned with rational behaviour under uncertainty; the second, with irrational disturbances and the third, with a coordination problem: if the captains of industry work well in business organizations, the gap between the micro- and macro-layers tends to reduce. Lavington's expectation of evolution in this manner is in accordance with that of Marshall.

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1 Introduction

Fredrick Lavington (1881–1927) is a forgotten figure. On the one hand, most scholars[1], including his contemporaries such as H Wright, admitted that he 'was the most orthodox of Cambridge economists', and his favourite dictum was 'it's all in Marshall, if you'll only take the trouble to dig it out' (W[right] 1927, pp. 503–4). On the other hand, some researchers[2] appreciated his theories and regarded them as being considerably original, which possibly had power to break the Marshallian—or orthodox—tradition. Previous studies have not identified the reason why these seemingly contradictory evaluations[3] continued; moreover, they have not addressed another one of Lavington's research areas—industrial organization—or for that matter, his vision on capitalism.

The primary aim of this paper is to extract Lavington's insight on the modern business society. In order to achieve this, we employ the following two procedures. First, we investigate his complete published writings and understand them as a coherent message. Second, we reconstruct them into the following three independent, but connected, layers: (1) micro-layer, related to the demand for money (pure theory); (2) macro-layer, related to

[1] Hicks (1935, p. 2; n1), Hicks (1937, p. 152; n3), Robertson (1937, p. 431; n4) and Eshag (1963) gave importance to the Marshallian tradition even in Keynes' liquidity preference by referring to Lavington's contribution. Laidler (1999, p. 83; n7) questioned why Keynes had disregarded Lavington.
[2] See Bridel (1987, pp. 96–100), Bigg (1990), Komine (1995a), Komine (1995b) and Bridel (2004).
[3] See a controversy with regard to Say's Law; Clower (1989, p. 26), Bigg (1990, p. 51), and Kates (1998, pp. 108–11).

the trade cycle[4] (reality) and (3) meso-layer, related to industrial organization (ideal). Considering the third element and subsequently understanding the three as one consistent structure is one of the main aims[5] of this paper.

The remainder of this paper is organized as follows. Section 2 presents a short biography of Lavington. Section 3 argues his insight on capitalism in the 1910s and 1920s. Section 4 discusses micro- and macroeconomic theories. Section 5 addresses mesoeconomics by referring to four case studies. Finally, the concluding remarks are presented in Section 6.

2 Biographical Note[6]

Lavington was born on 19 November 1881 in a south-western English county (Broad Hinton, Wiltshire). After completing his studies at Marlborough College, he worked for the Capital and Counties Bank for eleven years[7]. At Emmanuel College, Cambridge, he became one of J M Keynes' first students, alongside D H Robertson, H D Henderson, G F Shove, H Dalton et al.[8] C R Fay stated 'Lavington was the first and best economics pupil I ever had' (F[ay] 1927, p. 504). Fay's testimony was further supported by the following facts: (1) Lavington achieved first class in Part 1/2 of the Economics Tripos in 1910/1911, (2) he obtained 60 pounds as a research scholarship from his College[9], (3) he presented his paper 'Loan Policy of Joint Stock Banks' at Section F of the British Association for the Advancement of Science on 5 September 1910[10] and

[4] Haberler (1937, p. 134, p. 137) described it as a psychological explanation. Kojima (2004) compared it with that of Pigou and Taussig.
[5] Only Raffaelli (2003, p. 123) and Raffaelli (2006, p. 11) referred to the issue on industrial organization. However, their interests were to position him alongside other Cambridge economists.
[6] This section is generally indebted to W[right] and F[ay] (1927), Bridel (1987) [1998], and Bridel (2004).
[7] *The Times*, 18 June 1910.
[8] See Robinson (1947, p. 15).
[9] *The Times*, 21 June 1910.
[10] *The Times*, 26August 1910.

(4) he won the Adam Smith Prize[11] for a dissertation on 'The Agencies by which Capital is Associated with Business Power'.

Despite his excellent performance in college, in 1912, Lavington joined the Labour Exchanges Department of the Board of Trade, where W H Beveridge[12] was the director. While it is uncertain as to why Lavington changed his job, it is certain that he can be classified as an economics-trained government official, together with Keynes, Henderson, Dalton, Salter, Stamp and Beveridge. Although he developed a pancreatic disorder, he remained active in civil service, for instance, he served as a joint secretary of a committee[13] that investigated how women, instead of men, could be employed in the manufacturing industries during wartime.

Serious illness compelled him to return to Cambridge in 1918. In 1920, after being elected to the Girdlers' Lectureship[14], as a successor to Keynes, Lavington published 'his *magnum opus*' (Bridel 2004, p. 724) *The English Capital Market* in 1921. Subsequently, he became a Fellow of Emmanuel College and published a textbook, *The Trade Cycle*, in 1922. He joined a committee in Section F on German reparations, which recommended that the amount to be paid should be decided in accordance with common sense and economic law[15]. Further, he served as chairman of a session of the Association of Teachers of Economics in January 1927[16]. From 1911 to 1927, Lavington published eight academic papers in *The Economic Journal* (five) and *Economica* (three), seven book reviews and three books. As a result of being overworked, owing to his several administrative roles[17] at the College, Lavington died in a harness on 8 July

[11] Keynes also won the prize in 1909 for his essay on 'The Method of Index Numbers with Special Reference to the Measurement of General Exchange Value'.
[12] For his *Unemployment*, see Komine (2004).
[13] *The Times*, 6 March 1916. This committee was a part of the Board of Trade and comprised13 members including B S Rowntree, J S Nicholson and Beveridge.
[14] *The Times*, 1 July 1920.
[15] *The Times*, 14 September 1922. The committee consisted of 16 members, including Robertson, Dalton, Stamp, C W Guillebaud and J H Clapham.
[16] *The Economic Journal*, 37(145). March 1927, pp. 151–153.
[17] He was appointed at least twice as the chairman of the examiners of Part 2 of the Economic Tripos. *The Times*, 13 February 1924, and 17 December 1924.

1927. ‘The years of high theory’ were over for him, although according to G L S Shackle, in general, it had just begun in 1926.

3 Nature of the Modern Business Society

In order to understand Lavington’s insight on the modern business society during his time, we need to consider the following.

3-1 Facts and phenomena

Lavington regarded the modern business society highly because it could demonstrate ‘the great growth in the industrial power’ (Lavington 1921, p. 1) and ‘a persistent upward movement in output her [sic] head and consequently in material well-being’ (Lavington 1922, p. 13). People had enjoyed ‘the average standard of material comfort above that of any previous age’ (p. 102). However, he pointed out two evils which the industrial society had itself created[18]: cyclical movements and inequalities of wealth. The former was divided into three movements, namely, those in price, output and employment. Although fluctuations in price were the most conspicuous and significant (p. 15), those in the volume of production were also remarkable, particularly ‘the construction of capital goods expands and contracts in a marked degree’ (p. 16). Moreover, Lavington clearly recognized the problem that resulted from the first two movements as follows:

> These cyclical changes of business activity are probably the most important single cause of unemployment (p. 16).

With regard to the latter evil, i.e. inequalities of wealth, he pointed out two phases, both with seemingly equal importance. On the one hand, special opportunities made it possible to ‘organize resources as to increase the incomes of themselves [the rich] and of the community’ (p. 97). This was

[18] ‘[F]rom this essential characteristic ... the strength and weakness of the system alike arise’ (Lavington 1922, p. 95).

more pronounced if their large incomes were saved and not dissipated on extravagant living. In other words, inequalities of income were justified if they ‘arose only from differences in the ability, energy and thrift of those who contribute[d] to production’ (p. 98). On the other hand, the privilege, resulting from the practice of the freedom of bequest, accentuated inequalities of opportunity and interfered with the right selection of industrial leaders (p. 98). Regardless, these two evils should be considered in the discussion of the trade cycle.

3-2 A fundamental gap in the modern economic system

Lavington distinctly recognized the economic mechanism as ‘something strangely contradictory’ (Lavington 1911, p. 53) between micro- and macro-levels. He considered it to be a coordination problem in that it was difficult to determine how to adjust ‘social resources to social wants with no central co-ordinating control’ (p. 53). With the exception of ‘a system of State Socialism’ (Lavington 1925/26, p. 191), the following three strict conditions were necessary to identify self-interest ‘with social material welfare’ (Lavington 1911, p. 53): (1) competition was essential to guarantee the survival of the most efficient type of organization, (2) the individual considered a very long period of time when adjusting his/her resources and (3) owing to the limitations of human knowledge and ability, even competition could eradicate some defects. There were not such defects thanks to organization. Inversely, Lavington admitted that modern economies did not satisfy these conditions.

Consequently, given that coordination fails and ‘value is subject to change uncertain both in kind and degree’ (Lavington 1921, p. 82), there was ‘a continuous maladjustment of resources—a continuous social waste, which is irregularly distributed over individuals in the form of gain and loss’ (Lavington 1912, p. 398). Lavington took it for granted that there was a gap between individual economic actions and subsequent collective results. This recognition was the starting point for his analysis.

3-3 Three economic units

Let us now address the characteristics of the following three economic units that were extracted: entrepreneur, market as a whole and intermediate organization.

At the microeconomic level, independent economic agents, who can uninterruptedly engage in a specialized field of work (specialization), were at the central position in business. Such agents can be referred to as entrepreneurs (or businessmen). Although, traditionally, there were three groups in an economy (landowners, capitalists[19] and workers), only entrepreneurs assumed the responsibility and control of production.

the entrepreneur stands at the centre of the economic organization, for under his control pass all the productive resources of the community. It is he who estimates future demands; it is he who sets resources in motion now to meet those distant demands. (Lavington 1922, p. 27)

Further, entrepreneurs combine the services of land, capital and labour (Lavington 1921, p. 274). They are not only manufacturers but also merchants because they are businessmen in each chain of operations, undertaking the responsibility of initiating and organizing production (Lavington 1922, p. 20).

Moreover, entrepreneurs have a variety of characteristics: individual initiative, freedom of enterprise, the strongest impulses of human nature, ambition and ability, independent industrial adventure and the strongest motives of self-interest (p. 95). Above all, two roles are significant. One is to bear business risks in microeconomics, and the other is to estimate the future conditions of the markets in question in macroeconomics. For Lavington, entrepreneurs can be regarded as having the most important role in economies.

At the macroeconomic level, Lavington attempted ‘to trace the

[19] In the money market, they can be referred to as investors. Joining capital and business abilities can increase the productive capacity of society (Lavington 1921, pp. 3–4).

nature of the economies which the market effects as part of the organization of production, and to express those economics in terms of economic welfare' (Lavington 1921, preface p. 6). A market is 'a coherent part of the organization by which resources are adjusted to needs', and 'an organic thing, i.e. as a part of a living and developing industrial system'. Since a market itself formed a 'part of the general means of communication', it 'thus encouraged an organic development of society' (p. 5). For Lavington, a market as a whole was a sphere in which each industry (organization or market) was highly independent and decentralized but connected tightly as a network. Thus, similar to Marshall, Lavington also considered a market as an entity that evolved spontaneously.

At the mesoeconomic level (individual organization or industry), Lavington investigated (1) banks; (2) the stock exchange; (3) three markets (of money, capital and credit); (4) monopoly; and (5) industrial structures (particularly vertical integration).

Given the above, let us address how Lavington's vision can be applied to economic theories. We will examine the following three aspects: micro-, macro- and mesoeconomic ideas, which correspond to the theories on asset demand, the trade cycle and industrial organization (structure), respectively.

4 From Risks and Estimates to the Trade Cycle

Based on the abovementioned premise, we continue to examine Lavington's theoretical contributions. In this section, we will discuss his theories on asset demand and the trade cycle, based on the entrepreneurs' behaviour regarding risks and estimates.

4-1 Distinction between risk and uncertainty

Lavington pointed out two factors which generate risk and uncertainty: imperfect knowledge (incalculability) and immobility of invested resources (intractability) (Lavington 1921, pp. 82–3; 1925/26, p.

186).

From 1911 to 1926, Lavington had attempted to distinguish risk and uncertainty; however, there was a confusion in terminology in his attempts. A well-known distinction between risk and uncertainty made by Frank Knight[20] had almost no relation to the one proposed by Lavington. For Knight, risk indicated phenomena with definite probability distribution, whereas uncertainty implied phenomena that could not be grasped by probability distribution. By contrast, Lavington attempted to establish another concept. In general, he seemed to differentiate risk from uncertainty in the following manner: risk was related to unforeseeable undertaking, investment action (supply of capital) and production costs, whereas uncertainty was associated with an irregularity of incomes, consumption action and defects in distribution. Let us examine each aspect as well as the changes in their meanings over the years.

In 1912, risk was simply ‘an unrelieved probability of loss’ (Lavington 1912, p. 398). Uncertainty, or in other words, ‘the personal Risks’ (p. 407) or ‘the result of a particular form of Ignorance’ (p. 400), was related to ‘the amount of gain or loss’ and ‘the *spread* of a curve of prospective net returns’ (p. 399, emphasis in original). In 1913, the distinction was more obscure, only suggesting that uncertainty was linked to sudden contractions in the available resources at an entrepreneur’s disposal (Lavington 1913, p. 38). Lavington did not use the term risk, barring one instance (p. 38). Conversely, in 1914 (book reviews), he only used the term ‘risk-bearing’ (Lavington 1914, p. 264, p. 266). In 1921[21], a clear distinction was revealed in his portfolio selection theory: risk was ‘an unrelieved probability of loss’ and uncertainty was an ‘irregularity of return’ (Lavington 1921, p. 86). He again, as he had in 1912, defined uncertainty as the spread of the curves which indicated prospective net returns in each investment or venture (p. 87). He admitted that the idea of risk was now included as a part of the more general conception, uncertainty.

[20] See Knight (1919 [1964], p. 20).
[21] This was also year Knight published *Risk, Uncertainty and Profit*, which was the extended version of his 1916 dissertation.

However, despite the admittance, Lavington decided to discard the concept of uncertainty, both clumsy and unfamiliar (p. 89). Thus, the confusions in terminology remained[22].

Lavington addressed the distinction between risk and uncertainty for the last time in 1925/26, where he emphasized a subjective aspect of undertaking[23]. He stated as follows:

> inasmuch as they [business risks] arise mainly in the development of ventures whose prospects are not susceptible of precise mathematical expression, it is convenient to emphasise the fact that they depend more upon personal than upon actuarial valuations. This may be done by slightly amending the definition of Risk: by defining it not as the (actuarial) *probability*, but as the (individual) *expectation, of loss*. (Lavington 1925/26, p. 189, emphasis in original)

Furthermore, he linked risk with the expectation of loss and the realized loss in production, and linked uncertainty with the likely error of that expectation and reduced efficiency—or irregularity (p. 194)—of individual incomes (p. 192). He explained that a fire insurance company could reduce uncertainty but not risk; this was because while insurance could balance the irregularity of incomes, it could not reduce the expectation of loss from fire (p. 199).

4-2 Rational behaviour under business risks

In microeconomics, Lavington focused on the formation of rational behaviour under uncertainty. In the Marshallian tradition, this was an asset (money and security) demand theory, which consequently led to Keynes' liquidity preference and Markowitz–Tobin means-variance analysis. In this section, we will summarize that which has been examined in detail in

[22] According to Bigg (1990, p. 47), 'the distinction remains blurred'.
[23] Bigg (1990, p. 49) saw this aspect as 'an important step away from the substantively rational schema in the Marshallian Tradition'.

previous studies[24].

In 1921, Lavington argued that the individual demand for money was influenced not only by an individual's income but also by the rate of interest and the state of his/her expectations. He ascertained the triple simultaneous decision model for consumption, money-holding and security-holding. In the equilibrium, respective yields from the marginal unit on consumption, marginal utility of convenience and security and the net rate of interest coincided. This was what D H Robertson later termed the 'threefold-margin-of-preference theory of interest'. A modern business society compelled entrepreneurs to hold a stock of money 'as a first defence against the uncertain events of the future' (Lavington 1921, p. 30).

Further, Lavington, particularly in 1912 and 1921, developed a mean-variance analysis by drawing two graphs (average and spread of returns in safe and risky securities)[25]. Risky securities, which meant a variety of possible returns, were only preferred if their average returns were higher than those of the safe securities. The difference of returns represented a disutility, or uncertainty, 'for which a payment must be made in addition to the net rate of interest' (Lavington 1912, p. 399). This, including a discussion of risk premium, was an early version of Markowitz–Tobin analysis.

4-3 Irrational consequences in the trade cycle

At the macroeconomic level, however, the entrepreneurs' rationality did not always succeed in accomplishing coordination; in fact, more often than not it failed to achieve it. While pure theorists may have appreciated a decentralized system which spontaneously obtained an optimal position owing to price mechanism, it appeared that Lavington hesitated to directly reach a simple answer. Consequently, he adopted a manner in which he specified two main causes and one consequence.

First, entrepreneurs were so central in the production process that

[24] See Bridel (1987, p. 54), Bridel (2004, p. 724) and Komine (1995a, p. 799).
[25] For further details, see Komine (1995a, pp. 802–4).

their forecasts were vital in the trade cycle. Moreover, since production involved a long period of time (Lavington 1922, p. 20), estimates had to be on future conditions, and not on the current ones.

> the activity of business depends not on current conditions, but on the estimates which entrepreneurs form of the conditions of their markets at some distant date in the future. (p. 21)

Originally, the estimate was an independent rational judgment, at least *ex ante* and subjectively. However, these estimates inevitably included lethal errors because they were strongly coloured by the business atmosphere (p. 31). Additionally, these errors were further strengthened by arbitrary variations in the price index (p. 27). Finally, 'rationally based confidence gives way to optimism—judgments are infected by a general error' (p. 37).

Second, the increased interdependence between industries had an impact. Each specialized group producing specialized products had to 'sell its products for those of other groups' (p. 22).

> the ability of each to market its own products depends on the output by the other groups of the goods with which these products are bought. (p. 22)

Thus, capitalists, entrepreneurs and workers were in turn consumers. By means of the system of communications (transport of intelligence, material goods and value), the dissociated parts could be interconnected (Lavington 1921, p. 2). One impulse was spread out, and another stronger would generate.

Third, economies, as a result, had cumulative processes 'in all directions in the same manner as the original stimulus' (Lavington 1922, p. 36). For instance, wide oscillations of general prices added to the risks of business undertaking, which in turn resulted in an increase in cost of production, consequently leading to disturbing effects upon employment

(Lavington 1911, p. 58). Lavington concluded as follows:

> first, that there exist influences which, reacting upon and strengthening one another, cause a *cumulative* increase in business confidence and consequently in business activity; secondly, that this growing activity ultimately destroys the confidence on which it is based, with the result that the influences at work are reversed and there follows a *cumulative* decline in business confidence which leads to a condition of marked business depression. (Lavington 1922, pp. 29–30, emphasis in original)

An improvement in the business outlook actualizes production activity; the impact of which is so cumulative that business judgments are transformed from a rational basis into over-optimism. This situation in itself triggers the downward movements. The boom, with prices rising, involves the withdrawal of legal tenders and leads to dependence on over-commitments among business men (pp. 63–4). Apart from financial constrains (or disturbances), real factors are also significant; the quality of business management and the efficiency of labour decline as the boom proceeds (p. 75). Consequently, a turning point of the cycles is reached which may lead to cumulative depression.

In sum, economies are always vulnerable to the trade cycle[26]. Lavington envisioned that the modern business society was always subject to fluctuations, mainly due to the existence and importance of entrepreneurs and modern business structures. This is an example of how individual rationality leads to collective disturbances, or irrationality.

5 Industrial Structures

Previous studies, especially Bridel (1987) and Bigg (1990), had considered in part up to this point. However, we question whether

[26] Lavington (1922, p. 14) classified the rhythmical movements into three phases (rising, a brief interlude of apprehension and declining).

Lavington had a definite solution to fill the gap. In this section, we consider four case studies at the meso-level.

5-1 Bankers

A banking system[27], as a particular branch of production, had highly evolved in England; this system was the most suitable case study ‘to measure the divergence between the lines of direction of individual action and those of material social welfare’ (Lavington 1911, p. 60). In this regard, Lavington primarily questioned himself as follows: (1) Did banks earn undue and abnormally high profits? (2) In the event of any considerable divergence, did we need restrictive or supplementary action to correct the disparity of interest between the part and the whole (p. 54)?

With regard to the first question, Lavington responded in the following manner by raising four issues: (1) No, because at least a part of the great reserve funds are used in the business (p. 55); (2) no, banks could add for ‘the valuable immaterial organization—business connections and public confidence’ (p. 55); (3) no, the surplus profit of banks was ‘only a transfer from an inert class in possession of disposable wealth to a body of shareholders’ (p. 57)[28] and (4) yes, it was due to ‘the imperfect bargaining between banker and customer’ (p. 56). In sum, Lavington concluded that ‘the high social cost of banking services is not a considerable evil’ (p. 60).

Further, with regard to the second question, in banks, selection of the governing body was now done by democratic election as opposed to the earlier system of hereditary management. This change eliminated social waste and brought great stability to the banking institutions (p. 57). The great joint stock banks, with their superior size and management, offered the public greater security and were able to distribute capital much more evenly (p. 57). However, there was still room for improvement: (1) the need for common action among banks to control discount rates and the supply of currency, for stabilizing price levels (p. 59); (2) the necessary

[27] Its function was the transport of capital and the supply of money (p. 54).
[28] This phase is reminiscent of Keynes’ comment, ‘the euthanasia of the rentier, of the functionless investor’.

growth of banking experience and tradition (p. 59) and (3) the inaccessibility of capital to certain classes that were quite capable of using it effectively, due to imperfect human knowledge and experience. For instance, given that bank managers at huge banks are frequently relocated, their local knowledge must be inferior to that of small private bankers (p. 57, p. 60).

Despite these present conditions, Lavington was optimistic. The evolved banks would pursue a far-seeing policy; thus, there was ‘every reason to welcome recent changes in the system and to expect greater services in the future’ (p. 60).

5-2 A speculator in the stock exchange

Speculation is the yardstick by which researchers regard markets. Let us examine Lavington’s view on this subject taking into consideration the years 1913 and 1921. A speculative transaction can be defined as one that is conducted by a person whose operation is ‘influenced mainly by consideration of the future capital value of the security’ (Lavington 1913, p. 40). Its peculiarity lies in that it redistributes the disutilities, involved in the supply of capital, among issuers of securities. The supply price of capital comprises three disutilities: pure waiting, risk-bearing and financial insecurity bearing (precautionary motive). This was the other side of the threefold-margin theory. The first disutility corresponded to the utility on consumption, the second to the net return of security and the third to the utility on money-holding. When determining whether or not speculation was detrimental, Lavington considered two effects based on a criterion.

His standard was a correlation between individual and social net gains. He noticed the severance and stated the following:

the public interest in speculative transactions requires that they should be based on knowledge of what future prices *should* be, while the speculator is concerned only that they should be based on knowledge of what future prices *will* obtain. (p. 48, emphasis in original)

Ostensibly, the speculator's profit was limited only by a difference of price multiplied by the volume of his transactions. However, over and above this profit, the social advantage substantially consisted of an additional utility added (p. 42) to both direct and indirect services by means of speculation.

Direct effects of speculation were both reducing uncertainty (or risks) by forecasting the changes in value, and bearing the residue which the speculator could not still eliminate (p. 40). In other words, increasing the marketability of securities reduced the cost in the supply of capital. Without the stock exchange, big undertakings such as railways could not have been successful. Although monopolizing superior knowledge is harmful, unequal bargaining power can be destroyed by complete competition, the pressure of experts (p. 43). Indirect effects included discontinuity, moral evils and influences upon the price of securities. Discontinuity referred to the impact which speculative operations would bring daily life into instability. This impact would destroy the relation between conduct and consequence, which was the basis of rational action (p. 47; Lavington 1921, p. 258). Moral evils, such as increasing the pleasures of speculation per se, were a matter of opinion. After all, Lavington abandoned his attempts to ascertain the accurate effects of the two, by concentrating on the third element. Again, it was not based on a priori assurance, but on facts (p. 259; Lavington 1913, p. 46). Further, effects on the prices of securities and on the characters of the public were, in general, considered desirable.

Thus, Lavington, on the whole, both in 1913 and 1921, was optimistic. Although he still had a few reservations (without monopolistic powers, disregarding indirect effects other than on prices and so on), he concluded that the prices of securities approached more closely to investment values, thus speculation yielded a considerable net advantage to society.

5-3 Monopoly

The third case study was on monopoly. Lavington was primarily concerned with whether or not a *disinterested* monopolist could contribute to increasing the stability of business. Here, 'a disinterested monopolist' implied an economic agent 'who was concerned to regulate his business in the interests of society' (Lavington 1926, p. 135), whereas 'the stability of business' indicated a situation where 'the retardation or acceleration of the flow of purchases ... is likely to be at a minimum' (p. 141). Here, the stability of business was the most important criterion. Lavington made the following three assumptions: (1) this consideration was not actual but theoretical, (2) a monopolist acquired absolute control of supply and (3) the conditions of supply conformed to the law of constant cost (p. 131). Based on these assumptions, Lavington examined the following two aspects.

The first was with regard to fixed price. The initial point was the intersection between the normal long period demand curve and the supply curve. The supply curve was horizontal (infinite elastic) at a fixed price. Suppose the short period demand curve fluctuated vertically about the normal curve; then a comparison of the short intersection (upward supply curve) with the long intersection clearly reveals that shifting the demand curve upward meant a greater expansion of output (*vice versa*) owing to more elastic output. Thus, a policy of fixed price led to the instability of business (p. 139). However, such a situation could yield the following two scenarios: (1) in interdependent industries, the effect of a stable price might result in a reduction in the commercial risks of the subsequent producer (fixed contracts) and (2) if the 'market sentiment is pessimistic, a policy of fixed price is superior on the ground that a policy of flexible price operates as an artificial lowering of the demand curve' (p. 141). Thus, fixed price thwarted the expectation of a further decline in the demand during the depression. Therefore, the whole effect of fixed price was ambiguous and indeterminate (p. 142).

The second dealt with fixed output. Lavington observed fixing output at a level below that 'which would be prescribed for the monopolist by the doctrine of maximum satisfaction' (p. 146). This fixed output point

led to a reduction in the instability of business. This was because at that point, appliances of production and workpeople would be employed more continuously, consequently leading to a substantial reduction in the expenses of production (p. 147).

These arguments were not conventional to the market clearing theory. Even if there was a monopoly (fixing either price or output), various conditions, such as market sentiment and costs of hiring additional resources, would have affected the conclusions. Above all, these arguments revealed that a continuous employment of production elements (plant and workpeople) was the most significant criterion for economic welfare.

5-4 Vertical disintegration

The fourth case study was an investigation of the form and size of a business unit. In 1927, Lavington provided a contradictory scenario to the real phenomena in economies during his time; he proposed a theoretical ideal espoused by his mentor, Alfred Marshal in *Industry and Trade* (1919). Let us define the following three terms: (1) vertical integration as 'the association of unlike processes in successive stages' in the production of a single good; (2) lateral integration as 'the association of unlike processes in the same stage' (Lavington 1927, p. 30) in that of more than two goods[29] and (3) vertical disintegration, or horizontal combination, as 'an expansion in the output of a given restricted variety of products' (p. 30). His logic was to first point out the reality in modern business situations and then note a theoretical tendency to vertical disintegration.

A few technical conditions hindered the natural evolution of an industry. First, as was evident in industries such as heavy iron, steel and light chemical, the successive processes needed to be carried out in close physical conjunction, due to the technical interdependence of products[30]. Second, as was typical in the pottery (Wedgewood) and motor car industries, the quality of products at the various interconnected production

[29] Lavington did not distinguish a single good from many goods.
[30] 'The manufacturer may send away his cloth to be finished and dyed; but coal is picked and washed by the colliery' (p. 33).

stages was so uncertain that supervision at every stage was necessary (p. 34). Third, a balanced plant was needed; a plant whose successive processes were adjusted such that each process was conducted on a scale which was economically adapted in its productive capacity to the demands of the succeeding process (p. 34). It appeared that Lavington regarded these conditions as exceptional, yet he admitted that vertical (lateral) integration was evident in a few, but remarkable, industries.

Given the above, the question of identifying the natural tendency to vertical disintegration arises. This tendency can be defined as 'the principle of concentrating human faculty on a narrowed range of tasks' (p. 27). The division of labour[31] simplified the task of direction, which would then increase the volume of output. Further, this simplification and expansion could 'be efficiently controlled by a single mind' (p. 27). Vertical and lateral integrations implied 'a proportionate increase in the complexity of the business unit and therefore in the difficulties of management' (p. 30). Lavington stated as follows:

> The fact that the concentration of human faculty on a small range of problems is economical can only mean that there are sharp limits to the complexity of the undertaking which can be efficiently *controlled by a single mind*: in other words, that in each industry the growth in size and complexity of the representative firm is strictly limited by the organizing capacity of the representative entrepreneur. (p. 300, emphasis added)

It followed that the foremost was the control and governance by a single (able) entrepreneur, and therefore, Lavington preferred vertical disintegration, in which large-scale production and proper management were compatible. This was not his finding with regard to the real development in economies; rather, it was his aspiration for an ideal world, inspired by Marshall[32].

[31] See Laffaelli (2006, p. 11).
[32] This confirms that Marshall shared Lavington's view on business units. See Marshall (1919, p. 216).

6 Concluding Remarks

In this section, we provide a summary of all the arguments presented in this paper. Thus far, we have outlined Lavington's insight on the modern business society. This insight is understood as a threefold-layer structure at the core of which is a peculiar economic agent: an entrepreneur.

The micro-layer deals with a (pure) theory represented by the theory of the demand for money, which would subsequently result in two more sophisticated theories, namely, liquidity preference and portfolio selection. Lavington, one of the pioneers in those theories, described a typical situation of entrepreneurs under uncertainty who ventured to bear risks and undertakings as rational behaviour.

The macro-layer pertains to the perception of the present economic peculiarities. It is represented by the theory of the trade cycle. While it is a theory in macroeconomics, it can be regarded as Lavington's conception that modern economies suffered from cumulative ups and downs in trade. This was mainly due to an error in judgement made by an entrepreneur with regard to future estimates and due to the interdependence between firms and industries. At this stage, a divergence between individual rational actions and collective irrational consequences escalates to a maximum point.

The meso-layer is concerned with the ideal. It is represented by the theory of industrial organization and structure, which is divided into four subsets: bank, speculator, monopoly and business size. In each of these subsets, each agent has a dual function[33]. On the one hand, in each market, inferior participants had a tendency to merely follow the general situation. For instance, some bankers were so inexperienced and ill-informed that they were not worthy of high profits. Some speculators in the stock exchange, based on a short and restricted perspective, disturbed the market.

[33] This point generates seemingly contradictory interpretations. Researchers, who gave importance to Lavington's view on instability (stability), tended to associate him with Keynes (Marshall).

Some monopolists had no scope of social benefits. Some entrepreneurs could not handle complex processes of production and possibly disturbed the order of the market. On the other hand, the captains of industry or leaders in the industry, based on economic chivalry, had the ability to correct such disturbances. Superior bankers could pursue common benefits for customers and other bankers. Good speculators could behave as arbitrators to move the prices of securities closely into true investment value. Admirable monopolists could reduce the fluctuations in resource employment by adopting, for example, a fixed output policy. Virtuous entrepreneurs could fully utilize his/her abilities in the specialized processes of production by controlling the management of the organization.

Lavington noticed that the *captains of industry* were ideal and that there was a considerable gap between the reality and the ideal, or the macro- and micro-layers. This was the starting point for Lavington. However, economies had a third layer as well, the meso-layer, where there were several able leaders in collective groups, such as organizations, firms and industries. Moreover, here, entrepreneurs, as 'the modern organ of management' (p. 35), could correct the gap and wield control so as to adjust the social resources to the social ends if they evolved in the same line with Marshall's expectations. Lavington believed that the evolution of the English capital and commodity market would take place in this manner. Thus, from 1911 to 1927, he was constantly optimistic about the future of the modern business society.

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