The Making of Dennis Robertson's *A Study of Industrial Fluctuation*: Didn't Robertson's Theory of Trade Cycle Really Fit to the Cambridge School of Economics? [1]

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ABSTRACT

This paper aims to re-evaluate the significance of Dennis Robertson's (1890-1963) earliest work, *A Study of Industrial Fluctuation (SIF)*. Since Robertson quoted from the writings of continental economists, it has been thought that *SIF* has nothing new and is independent of the Cambridge School of Economics. However, we show that *SIF* has inherited as well as original characteristics and that Robertson developed them during his undergraduate days at Cambridge university. We investigate Robertson's academic life before the publication of *SIF* and highlight his traditional Cambridge economist-like characteristic.

1. Introduction

D. H. Robertson (1890-1963) was an economist at Cambridge University, who served as a professor of political economy after A. Marshall and A. C. Pigou. Robertson was well known to the Euro-American world and received honorary degrees from several foreign universities. Nevertheless, Robertson's popularity has significantly faded in the present age, and even at Cambridge, readers of his works have dwindled over time (Dennison 1992: viii). Although his monetary theory after 1920s is often compared with Keynes' theory, Robertson's early economic research and his first book, *A Study of Industrial Fluctuation: an enquiry into the character and causes of the so-called cyclical movements of trade* (1915) (hereafter, *SIF*), have been almost neglected. Presley (1981), who first studied Robertson's economic theory in terms of the history of economic thought, cites the reason for the reduced focus on Robertson in the following evaluation:

> '[In *SIF*] Robertson proved to be *a disciple of A. Aftalion*; here, therefore he gave nothing new to economic literature, except the published in the English language' (Presley 1981: 182, emphasis added).

Collard (1990: 186) follows the evaluation:

> '*A Study of Industrial Fluctuation* was not a particularly original book. In stressing the role of technology Robertson was preceded by Tugan-Baranowski…[and] by Aftalion'.

And also Fletcher (2008: 58) says that '[o]ver-investment theories [in *SIF*] were novel in Britain but less so on the continent.' In his early period Robertson quoted a theory proposed by certain continental economists, especially French economist A. Aftalion, although it was uncommon as Cambridge economists. As Fletcher (2008: 58) says '[t]hough he was to follow the "method of Dr Marshall" his theory nevertheless departed significantly from inherited Cambridge ideas', this is because Robertson adopted a heterodox approach, unlike other Cambridge economists, especially in his early period. On the other hand, another opinion is that

Robertson was a Cambridge economist much influenced by Marshall (e.g. Gilbert 1982: 58). It means that Robertson was a traditional but heretic economist in Cambridge School.

Would such an evaluation be appropriate? Would it be difficult to regard him as a Cambridge economist during the early part of his academic life? In this paper, based on an awareness of these issues, we search for the process by which Robertson's first book was formed. We would like to emphasise Robertson's aspect as a traditional Cambridge economist, by investigating his academic life before the publication of *SIF*. We approach the aspect by referring to some materials, which hitherto have not been referred to often: *Cambridge University Calendar* (*CUC*), *Cambridge University Reporter* (*CUR*), *Cambridge Review*, Papers of Dennis Robertson (PDR, Wren Library, Trinity College, Cambridge), and some additional pages of *Journal of the Royal Statistical Society* 77(2).

In section 2, we present an overview of Robertson's early period of his economic studies. Here, 'early period' covers the period between his undergraduate days and the publication of *SIF*. Robertson's studies during the period laid the groundwork for his work as an economist. The period played a very important role later in shaping Robertson's economic theory. First, we portray a complete picture of Robertson's earliest studies by surveying his undergraduate days, and then we present an outline and the characteristics of *SIF*, which is one of the greatest results of Cambridge education. In sections 3 and 4, we elucidate the formative history of *SIF*. We focus on his researches on economic fluctuation, or trade cycle, examine reviews of his studies, and investigate the manner in which these studies were connected with *SIF*.

2. Robertson's Academic Life before the Publication of *SIF*

Classical Tripos and Economics Tripos — October 1908 – May 1912

Robertson was born in Lowestoft, Suffolk, located in the east of England, in 1890; he received education from his father, James Robertson, until he entered Eton College in 1902. He spent a lot of time studying classics at Eton and he got a scholarship for studying classics when he entered Trinity College, Cambridge University. He also got numerous prizes and scholarships for classical studies and literature: Prize of Latin Declamations (1909), Additional Prize of Composition (1909), Chancellor's English Medal (1909, 1910, 1911), Porson Scholarship (1910), and Craven Scholarships (1911). Then in May 1910, he took the classical tripos (part I), which is an honours graduation examination in Cambridge University, and he was placed in the first division of the first class (*CUC* 1911: 459). These facts reveal that Robertson had intensively studied classics—not economics—during his freshman year and the first half of his sophomore year of college.

However, after the classical tripos, he suddenly switched to the economics stream. Then, in May 1912, he took up the economics tripos (part II), and was placed again in the first division of the first class (*CUC* 1913: 707). Robertson's notable performance gained him a post as Lecturer in Clare College (*CUC* 1913: 976) and as Sub-Lector in Trinity College (*CUC* 1913: 1169). Thus, Robertson's career as an economist started-off on a good note.

From Economics Tripos to Enlistment in the Army — May 1912 – August 1914

Robertson had written fifteen works during his undergraduate days and the earliest years of career until his enlistment. His main interests at that time were not related to monetary theory, but socialism (syndicalism), international relationships (war), and economic fluctuations. These themes may be regarded as the phenomena arising as reactions against a capitalist economy. Robertson's interests in the earliest period would be directly linked with the changing times and be inspired by pressing social problems.

As we shall see later in section 4, Robertson's research activities on economic fluctuation began in earnest after the economics tripos (1912). In November 1913, his first paper on economic fluctuation brought him the Cobden Prize, and he published a book review on particular economists' theory of economic fluctuation in succession, in November 1913 and March 1914, and presented his perspective on economic fluctuation at the Royal Statistical Society in December 1913. His fellowship thesis on economic fluctuation was accepted in August 1914. It was published under the title *A Study of Industrial Fluctuation* in November 1915 during his enlistment. Thus, it would be clear that Robertson had actively studied economic fluctuation then, which was one of his most important subjects.

3. *SIF* as the End Result of Cambridge Education

Before we come to the formative history of *SIF*, let us look briefly at the characteristics of *SIF*. What did Robertson try to clarify through *SIF*? A look at the contents page of *SIF* would provide us with an answer. The book consists of two parts: part I is titled 'Fluctuations of individual trades' and part II is titled 'Fluctuations of general trade'. Moreover, Part I is divided into two parts: (a) 'Phenomena of supply' and (b) 'Phenomena of demand'. Part II consists of four chapters: 'Revival', 'Crisis and Depression', 'The wage and money system', and 'Conclusion'. The table of contents and the text show at least four noteworthy points in this composition.

'Individual' and 'General'

Firstly, the fluctuations are divided into 'individual' and 'general'[2]. That is, Robertson tried to analyse the economic fluctuations by distinguishing fluctuations of particular industry and those in general. He said in *SIF* as follows:

> 'In the preceding discussion we have been frequently met by indications that the alleged universality and simultaneity of the so-called general fluctuations of trade are in part a figment of the public imagination, that the vicissitudes of the several industries and groups of industries are in no small measure governed by their own individual idiosyncrasies of supply and demand' (*SIF*: 121).

This quotation shows that Robertson had sceptical attitude to relativity between fluctuations of individual industries and those of general industry.

In fact, he thought that both the characteristics were different and it was much difficult to explain the process of fluctuations in general. In the analysis of individual fluctuations, he unexceptionally adduced numerical examples for each theoretical speculation.

However, it does not mean that his method was inductive. For Robertson, in accordance with Marshall's teaching (*Principles*, I, 29), such evidences were a tool for proving the propriety of his theory, and they were not for theorising. On the other hand, only a few examples are presented in the latter half of *SIF* or in the arguments on general industrial fluctuations, because, at that time, it was difficult to obtain any information on macroeconomic statistics. However, the difference caused due to fewer examples is merely apparent, and the following quotation shows the actual difference between the 'individual' and the 'general' fluctuations:

> 'I propose, therefore, in the first part to consider the causes of fluctuations in particular industries or groups of industries. The first group of chapters deals with those causes which must be sought

primarily in phenomena of supply, the second with those which must be sought in fluctuations of demand. In the second part I propose to inquire how far these partial fluctuations are sufficient to explain the so-called general fluctuations of trade, and what further steps remain to be taken towards the construction of a comprehensive theory' (*SIF*: 10).

Thus, it was important for Robertson to separate the theory of 'individual' and 'general' fluctuations for facilitating theorisation. However, his final purpose in *SIF* was developing the theory of 'general' fluctuation. In other words, he believed that the theorisation from a macro-perspective was one of the unique points of *SIF*.

'Supply' and 'Demand'

The second characteristic is that the causes of economic fluctuations are investigated from both the 'supply' and 'demand' perspectives. Marshall said as follows:

> '[t]hese two [the science of wants and that of efforts and activities] supplement one another; either is incomplete without the other. But if either, more than the other, may claim to be the interpreter of the history of man, whether on the economic side or any other, it is the science of activities and not that of wants' (*Principles*, III: 90).

'The science of wants' is nothing short of consumption (demand) theory, and 'the science of efforts and activities' are production (supply) theory.

In line with this teaching, Robertson insisted that the cause of economic fluctuations should be analysing both the supply- and demand-side. It is, however, only in part I that both sides are clearly divided. Also, in part II, both sides are analysed, but it is ambiguous because these sides are expressed in terms of the concept of 'effort'. The concept includes both 'sacrifice' and 'satisfaction': the former is followed by production (supply) and the latter is obtained by consumption (demand). Thus, he tried to clarify causes of economic fluctuations by analysing both supply- and demand-side, but, judging from the number of pages dedicated to supply-side analysis, it seems that Robertson emphasised more on the supply side. Also in this regard, Robertson's method of analysis seems to follow Marshallian thought.

'Real' and 'Monetary'

Thirdly, almost all the pages of the book deal with non-monetary theory. It is in the end of this book (chapter 3 of part II) that 'money' is considered. Although there are references to monetary influences, they are just an additional indication. *SIF* was his experiment which explains economic fluctuations without monetary factors.

In fact, Pigou gave such a viewpoint. It is very likely that Robertson attended Pigou's lecture titled 'Structure and Problems of Modern Industry' (*CUR* 1912: 867)[3], and Pigou told him to analyse the trade cycle by digging down the *real* factors beneath monetary phenomena (PDR, C1.2). Some critics regard Robertson's non-monetary assumption as an unrealistic lapse and question the credibility of the whole theory (e.g. Haberler 1939 [1958]: 156-8). However, following the guidance of his supervisors, Robertson tried to show the real factors that formed the foundation of the fluctuation theory – the foundation explained the manner in which monetary factors would influence the basic theory. It was after clarifying the non-monetary factors that he had to clarify the monetary factors of economic fluctuations.

Not 'Cycle' but 'Fluctuation'

Lastly, the word 'cycle' is rarely used in *SIF*, although it is used in the subtitle. Robertson was sceptical about the *periodic* characteristic of the economic fluctuations. For example, Robertson criticised H. S. Javons' hypothesis of a 3.5 years' average period by agricultural factors, with which Javons insisted that economic cycles could be explained by only barometric variation (*SIF*: 147). That is, Robertson avoided explaining an economic fluctuation using only a single factor. Since he thought that the actual economic phenomena were much complicated, different factors must be working each time. Therefore, he did not try to show the train of process, namely a periodical cycle, involving expansion, crisis, depression, and the next expansion, but cut off a part of the fluctuation, such as a period of expansion, of crisis, and of depression, and then investigated these 'fluctuations' individually. Consequently, he discussed diverse issues, and always considered not one but multiple explanations.

Let us summarise the four noteworthy characteristics of *SIF*. In *SIF*, Robertson analysed 'individual' economic fluctuations from both the supply- and demand-side, and then tried to theorise 'general' economic fluctuation, which was separated from the theory of 'individual' fluctuation. Moreover, the monetary factors were intentionally disregarded, and non-monetary factors—real factors— of economic fluctuations were categorically investigated.

At that time, when almost all economists had to depend on the monetary effect to explain trade cycles, such a trial by Robertson can be evaluated as ground-breaking. It should be inappropriate to describe *SIF*, as 'he gave nothing new to economic literature'. From the following section, we show how these characteristics were germinated.

4. Formation of *SIF*

As mentioned above, *SIF*'s four noteworthy characteristics are as follows: (1) the distinction of economic fluctuations into 'individual' and 'general', (2) the analysis of both 'supply' and 'demand' sides, (3) non-monetary theory—

'real' theory, and (4) the consideration of various factors. Then, how and when were they formed? Robertson's works before *SIF*, namely, the Cobden Prize award thesis, reviews on works of Hawtrey and the continental economists, and a report presented at the Royal Statistical Society, may answer the question. In this section, the formation process of *SIF* is clarified by surveying these in order.

the Cobden Prize Award Thesis — 10 October 1913

The Cobden Prize was awarded once in three years to an excellent economic study. A. C. Pigou (1901) and F. Lavington (1907), who are prominent Cambridge economists, also received this award. In 1913, Robertson was awarded the Cobden Prize (*CUC* 1914: 130), and he was the last winner of this prize as it was abolished in 1913.

The subject he chose was 'The light thrown by the Comparative movements of different industries upon the Character of cyclical fluctuations in industry in general' (*CUC* 1912: lxix). Robertson submitted the essay by October 10, 1913 (*CUR* 1912: 986; *CUC* 1913: x), and the essay is the same as the dissertation which he submitted in the summer of 1913 (Fletcher 2007: 41-42). Since his first fellowship submission failed, the Cobden Prize thesis should be an important resource to know what his research was lacking. Unfortunately, the manuscript is no longer available, and hence we do not access to its contents. However, a letter from A. C. Pigou to Robertson[4] holds a clue to assume them.

In the letter, Pigou says as follows:

> 'I think (a) you ought now consistently and thoroughly to dig down behind money appearances to real facts (b) to distinguish more between causes of a *general* kind affecting industry as a whole (this is rough, of course) and special causes affecting particular industries.' (PDR, C1.2)

Pigou thought that Robertson's research lacked there two points, which are noteworthy characteristics of *SIF* (characteristic 3 and 1).

Robertson revised the paper in line with Pigou's advice, and he was successfully elected a fellow of Trinity College. Then, the fellowship thesis was published as *SIF* in December 1915. Robertson's paper for Cobden Prize was positioned as the first draft of *SIF* (*SIF*: vii), and it is clear that the analysis framework of *SIF* was gradually formed in the process of revising the Cobden Prize award thesis—the dissertation—in line with the teachings of Cambridge School of Economics.

A Review on Hawtrey's Book — 27 November 1913

In *Good and Bad Trade* (1913), R. G. Hawtrey had tried to prove the mechanism of trade cycles by only monetary factors. Robertson's book review on him appeared in *The Cambridge Review* (November 27, 1913), which is a journal of university life and thought published by the students of Cambridge University. Robertson appreciated a part of Hawtrey's monetary trade cycle theory, but he goes on to say:

> 'His [Hawtrey's] self-dictated obsession with monetary phenomena leads him, grossly to underestimate the effect of a dislocation in one trade upon the volume of production in other trades. ⋯ It leads him—most important of all—to ignore completely that recurrent tendency of the business community to an over-investment of its resources in fixed capital which ⋯ common observation suggests as the dominant characteristic of modern fluctuations' (Robertson 1913: 163).

Robertson criticised it for disregarding the characteristics of fixed capital and influences of transference of purchasing power between economic agents (ibid). The characteristics of fixed capital refer to the inputs of a modern production facility, namely the factors of *supply* side. On the other hand, the transference of purchasing power between economic agents includes the factors of consumption, otherwise referred to as the *demand* side. According to Robertson, analysis of both the supply- and demand-side should have been attempted for providing a complete explanation on the economic fluctuations (characteristic 1), but Hawtrey's theory had lacked such a viewpoint.

Furthermore, two quotations given below clearly show Robertson's attitude on the theory of economic fluctuations.

> 'If he [Hawtrey] had studied the figures of *production* and *consumption* of various commodities, he might have developed a healthy scepticism about the "phenomena of trade fluctuations being well established," and it might have been borne in upon him that purely *monetary* influences are after all of secondary importance' (Robertson 1913: 163, emphasis added).

This quotation shows Robertson's analysis of both supply and demand side (characteristic 2), and his non-monetary approach (characteristic 3): monetary factors of economic fluctuations are secondary matters and the truly important factors include the real factors, which are classified under the monetary phenomena.

Moreover,

> 'Mr Hawtrey's naive assertion that "the phenomena of trade fluctuations are so well established that economists and statisticians on the one hand and business men on the other are all likely to agree as to whether the correspondence" of the recorded facts with his theory "is established" seems in itself a sufficient proof of the inadequacy of his theory' (ibid.).

This quotation shows Robertson's sceptical position towards Hawtrey's approach in using only a *single* factor to explain economic fluctuations as whole. As mentioned above, *SIF* always stressed on emphasising the real factors (characteristic 3) and recognising the complexity of actual economy (characteristic 4), and it is clear that Robertson had maintained this viewpoint developed during the earliest period of his economic research.

Reviews on Books by Tougan-Baranowsky and Aftalion — March 1914

Robertson's evaluation of the continental economics appeared in a book review on *Les Crises Industrielles en Anyleterre* (1913) by Michel Tougan-Baranowsky and *Les Crises Periodiques de Surproduction* (1913) by Albert Aftalion. Robertson presented his review on the book by Tougan-Baranowsky and Aftalion, successively, in *The Economic Journal*.

In the book reviews, there seem to be at least two points that Robertson wanted to emphasise. Firstly, most of their arguments depended on the monetary effects, as was the case with Hawtrey's arguments in his book. In relation to Tougan-Baranowsky's argument, Robertson stated that 'the same determination to burrow below mere monetary phenomena followed by the same relapse into monetary terms at all critical stages of the argument' (Robertson 1914b: 82). In addition, in connection with Aftalion's argument, Robertson stated that 'M[onsieur]. Aftalion is already on the outskirts of that monetary miasma' (ibid: 85). Thus, the existing theory of trade cycle had depended on the factors of money or credit. The situation was the same as that of Hawtrey's theory, but Robertson, like Pigou, believed that looking at the effects of monetary phenomena is not sufficient, and he was interested in digging down the real factors under the monetary phenomena (characteristic 3).

The second emphatic point is that they tried to identify the contribution of the characteristics of modern industries towards economic fluctuation. Robertson admired them for their attention to the characteristics of modern industries. The *Good and Bad Trades* by Hawtrey was devoid of this viewpoint. However, as stated by Robertson in the following quotation,

> '[i]t is M[onsieur]. Baranowsky's own self-satisfaction with his discovery which prevents him from attempting to explain further the precise nature of that over-investment in the means of production upon which he rightly insists as the dominant cause of modern fluctuations' (ibid.: 83).

Moreover, although Baranowsky found modern industries to be one of the causes of economic fluctuations,

> 'In view, however, of the criticism directed in the second part against Juglar and other writers for their preoccupation with phenomena of circulation and credit, it is rather disappointing to find that the author's own narrative deals almost exclusively with such phenomena, and that little or no attempt is made to discuss the fluctuations of production or consumption' (ibid.: 82).

The above quote implies that while the conventional theories of economic fluctuations largely depended on the factors of money or credit, Baranowsky was preoccupied with criticising money or credit in his book. Conversely, Aftalion discussed the characteristics of the modern industries at length by giving some statistical evidence and the production function curve of fixed capital, emphasising the importance of the characteristics of modern industries, and then he put forward his own theory of 'the period of production'. That is, as far as supply side was concerned, Aftalion did go into greater depth.

Therefore, Robertson highly evaluated Aftalion's theory mainly because of his in-depth analysis of production (supply side). However, it should be noticed that Robertson highly evaluated just a part of Aftalion's theory, and that he gave a negative evaluation on a significant portion of Aftalion's theory. Moreover, Robertson states that '[t]here remains the difficulty of the shortness of the period of production compared with the length of the trade cycle' (ibid: 85-86). That is, the theory of 'the period of production' could not explain all the individual fluctuations, and since 'the periods of production' differ in each industry, it failed to explain not only individual fluctuations but also the general fluctuations (characteristic 1).

Moreover, although Robertson actively accepted the importance of a change in demand side due to fashion, war, legal systems, and the transference of purchasing power (*SIF*, Part I, (b); Part II), he criticised Aftalion for failing to explain the importance of these factors. Robertson described it as follows:

> 'His [Aftalion's] determination to ignore agricultural influences[5], his oblivion of the existence of stocks of real capital the proportion of which, directed to investment, may be altered, for instance, by some great invention, and above all his haziness as to what the revenue or purchasing-power of a society really consists in, all prevent him from admitting the probability of large fluctuations in demand' (ibid.: 86).

This quotation clearly shows Aftalion's weak points and Robertson's originalities. Although Aftalion's argument included detailed analysis of the supply side, it was still insufficient and there was almost no profound analysis of the demand side. That is, Aftalion's theory of 'the period of production' not only failed to explain fluctuations of general industry but also failed to explain those of the individual industries.

The fluctuations in individual industries and those in general comprised the main subject of Robertson's discussion. Robertson's issue was a lack of comprehensive explanation on the fluctuations of individual industries and the expansion of the range of the theory for explaining the fluctuations of general industry, and he tried to resolve this issue through *SIF*. Robertson, therefore, stressed the importance of the demand-side factors, namely, transference of the purchasing power between economic agents; he discussed these factors at length in *SIF* (Part I, Chs. V-VII). It follows that this emphasis on the demand side was one of the unique points of Robertson's economic fluctuation theory. This characteristic in Robertson's theory reflects Marshallian thought in the sense that he stressed the importance of both the supply- and demand-side (characteristic 2).

Robertson's Report to the Royal Statistical Society — 16 December 1913

Robertson presented a report of his research in the Royal Statistical Society conference, which was held on December 16, 1913. The report presented by Robertson in this conference appeared in the *Journal of the Royal Statistical Society*, but, in fact, five pages were added to the end of this report, which present Robertson's debate with other specialists on his theory. An investigation into the arguments presented by these specialists would clarify how the contemporary economists evaluated Robertson's theory.

The title of the report was 'Some Material for a Study of Trade[6] Fluctuations', and it consisted of two sections: 'The influence of the period of gestation' and 'The influence of the length of life of the instrument'. Presenting sufficient data on various trades, Robertson insisted that the main characteristics of modern industries are 'the period of gestation' and 'the longevity of the instrument' and that these characteristics are the basic causes for fluctuations in individual industries. Almost the entire manuscript of this report was used in the first half of Part I '(a) Phenomena of supply' of *SIF*. That is, this report presents the result of his analysis on the supply side for fluctuations of individual industries. In *SIF*, Robertson proposed four characteristics of modern industries: 'the period of gestation', 'accessibility to investment', 'imperfect divisibility and intractability of the instrument', and 'longevity of the instrument'. It is also clear that Robertson got the inspiration for two of the aforementioned characteristics while making this report.

'The period of gestation' means the length of time between producers' decision to expand the production and the flow of goods into the market. It takes a significant amount of time for the modern industries to expand their production capacity for producing more goods and distributing them in each market. Such a time lag promotes over-investment, for according to general economic theory, if the volume of production increases, then the price will instantaneously decrease and the volume of production will be adjusted. However, actually it takes a significant amount of time to increase production because of 'the period of gestation', which leads other producers to expand their production due to the high price. This scenario considerably increases the volume of goods that flows into market at the end of the period, which further results in a sharp decline in the price. Robertson argued that this is one of the chief causes of depression in individual industries.

The theory of 'the period of gestation' explains causes of individual trade fluctuation from the supply side, and it is one of the main themes of Robertson's economic fluctuation theory. However, as mentioned above, there are many overlaps between his theory of 'the period of gestation' and Aftalion's 'the period of production'. Therefore, *SIF* or his early period theory have been assumed to be a mere imitation of Aftalion's. However, such an evaluation is inappropriate, because, as mentioned above, *SIF* has a number of important elements other than 'the period of gestation'.

Moreover, in the first place, there are doubts over whether Robertson imitated Aftalion. The discussion presented at the statistics society can prove that Robertson created his theory of 'gestation' based on Cambridge School of Economics, and not from the continental economics.

Discussion after his Report — 16 December 1913

D. A. Thomas[7], R. G. Hawtrey, A. W. Flux[8] and F. Y. Edgeworth (the president) gave their comments in a discussion after Robertson's presentation. Naturally, most comments were about statistics or data owing to the objective of the statistics society to promote the importance of statistics and data. Flux and Edgeworth, however, evaluated Robertson's theory itself. As Flux states in the following quotation:

> 'So far as the ideas of the Paper were concerned, they seemed to him [Flux] more important perhaps than the statistical verification which accompanied them' (Robertson 1914a: 176).

Probably, Robertson wanted the audience to pay more attention to his idea rather than the enormous quantity of data, because 'Mr. Robertson entirely agreed with him [Flux] in that' (ibid.). Subsequently, Edgeworth agreed with Flux's comment and highly evaluated Robertson's idea and regarded it as an extremely important one. He gave two reasons for his evaluation. They are as follows:

> 'The Paper afforded remarkably good illustrations of that fundamental distinction between long periods and short periods which Dr. Marshall had first of all pointed out clearly' (ibid.: 177),
> 'As he [Edgeworth] listened to Mr. Robertson's able composition, Marshall's conception of quasi-rent had often occurred to him [Robertson]' (ibid.: 178).

Thus, Edgeworth's evaluation showed that Robertson's idea was a well-observed tradition of Marshallian or Cambridge School of Economics. That is, he tried to explain the economic phenomena, which could occur between 'short period' and 'long period': the former is the period when the production scale is stable, and the latter is the one when the scale can vary. While 'quasi-rent' obtained during 'short period' will be lost in the 'long period', 'the period of gestation' causes misestimation that not only removes 'quasi-rent' but also leads to a loss. This is also one of the causes of depression in individual industries.

After the comment, Robertson replied as follows:

> 'the idea was the most valuable thing in the Paper, and that belonged partly to M [onsieur]. Aftalion and partly, he [Robertson] thought, to Mr. Yule, who *first* suggested it to him' (ibid., emphasis added).

Yule (George Udny Yule, 1871-1951), who had read engineering at UCL, and then studied statistics under Karl Pearson, moved to Cambridge University to give lectures of statistics, which course was newly created in 1912, when Robertson took Part II of Economics Tripos. Robertson definitely referred to Aftalion's theory of 'the period of production' while formulating the theory of 'the period of gestation', but it should not be neglected that he had first drawn inspiration for the idea from his academic life in Cambridge. The fact is mentioned in *SIF* (15, f.n.) as well. Moreover, when Robertson presented his arguments on economic fluctuation, he did not quote Aftalion's theory as his master. It was only because he found that Aftalion's theory reflected Marshallian thought, such as the concepts of long and short periods and theory of quasi-rent, to economic fluctuation theory[9]. Indeed, Robertson highly evaluated the theory of 'the period of production', but we must not forget that he criticised almost the entire book of Aftalion. This clarification implies that Robertson's basic knowledge on the subject was fostered in Cambridge, especially the basics of Marshallian economics. This knowledge helped Robertson to formulate the theory of 'gestation'. Hence, it would be quite unsatisfactory to assume that Robertson merely introduced the continental economics into Britain.

5. Conclusion

This paper has showed some reasons for insisting that it is not fair to regard Robertson in *SIF* as 'a disciple of A. Aftalion' or regard his theory as 'nothing new'. There are four characteristics of *SIF*: (1) the distinction between 'individual' fluctuations and 'general' fluctuation—Aftalion or other previous writers did not have such a viewpoint, (2) analysis of both the 'supply' and 'demand' sides—Aftalion was reluctant to analyse fluctuation from demand side because of his excessive emphasis on supply side, (3) the 'real' theory without any 'monetary' influences—existing researches on economic fluctuation had relied on the monetary effects, and (4) consideration of various factors—most prior writers had tried to prove fluctuation using a single factor. These inherited and original methods of Robertson developed during the process of his economic research at Cambridge: his education at the Cambridge University; Cobden Prize award thesis; the reviews on the works of Hawtrey, Tougan-Baranowsky, and Aftalion; and the report and discussion at the Royal Statistical Society.

Again, Robertson in writing *SIF* has been regarded as a heretic in Cambridge on the ground that his theory of 'the period of gestation' resembles Aftalion's theory of 'the period of production'. However, this assertion should be denied based on two reasons. First, the contents of *SIF* were not completely based on the theory of 'the period of gestation'. The theory of 'gestation' is important, but that forms only a part of Robertson's theory of fluctuations of *individual* industries, which should be segregated from his theory of *general* fluctuations. The theory of 'gestation', therefore, should not be regarded as his whole theory.

Second, Robertson by no means copied Aftalion's theory. He used theory of 'the period of gestation' to express the interval between 'short periods' and 'long periods', which Marshall had clearly pointed out in his masterpiece. Moreover, it is clear, from the evaluation of contemporary economists that Robertson's theory is not a mere imitation of one of the theories of continental economics, and Robertson had tried to develop his own theory of economic fluctuation, following the Cambridge tradition.

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Note

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2 In *SIF*, Robertson regarded whole economy as an aggregate of industries,

and, therefore, he used the word 'industrial fluctuation.' In this paper, 'industrial fluctuation' and 'economic fluctuation' are not distinguished strictly.

3 Collard (1990: 184) mentions, without any evidence, that Robertson had learned industrial theory from Pigou and monetary theory from Keynes. According to *CUR* (1912), only in 1911, when Robertson must have got lectures of economics in Cambridge, Pigou gave a lecture titled 'Structure and Problems of Modern Industry' instead of 'Principles of Economics'. On the other hand, J. M. Keynes gave lectures titled 'Principles of Economics' in Pigou's place. That year Keynes was too busy because of his four lectures on monetary theory. Given the situation, as Collard (1990) noted, it is more likely that Robertson got lectures on industrial theory from Pigou, and on monetary theory from Keynes (*CUR* 1912: 867).

4 Robertson submitted the essay by October 10, 1913, and the winner of the Cobden Prize was announced on November 28 (*CUR* 1913: 304). Since, in the letter, Pigou says 'I expect that the result of the Cobden will be announced before very long,' we can assume that it was written between October 10 and November 28.

5 It is true that Robertson emphasised the importance of agricultural effects in *SIF*, but it is a misleading to regard his fluctuation theory as agricultural factor theory; for, the reason of his emphasis on agriculture was that he believed that a transference of purchasing-power between 'agriculturalists' and 'industrialists,' caused by variation in the exchange-value of crop, would affect volume of investment (demand side).

6 The word 'trade' involves individual industries like the cotton industry or the coal industry. Using the word 'industry,' Robertson seems to mean the aggregate of various trades.

7 David Alfred Thomas (1856-1918). He was a coal interest in Wales

and Liberal politician. He had much data on coal industry and he reported, at the Royal Statistical Society in 1903, his paper titled 'The Growth and Direction of Our Foreign Trade in Coal during the Last Half Century'.

8 Alfred William Flux (1867-1942). He had studied mathematics at Cambridge, but he shifted into economics under Marshall's influence. He was an original member of the Royal Statistical Society, founded in 1890, and he taught at University of Manchester and McGill University (Canada).

9 Although Robertson did not clearly mention it in the Royal Statistical Society, in *SIF* he said as follows: 'This argument [of 'the period of gestation'] is, in fact, only a development of that doctrine of quasi-rent long familiar to students of Dr. Marshall's work: but the credit of its first formal application to the study of fluctuations seems to belong to Professor Aftalion of Lille' (*SIF*: 14).