

The Contribution of Maurice Allais to Contemporary Macroeconomics: From French Planning to National Accounting

Arnaud Diemer

University of Clermont-Ferrand, Cerdi, Erasme, France

Email: Arnaud.diemer@uca.fr

How to cite this paper: Diemer, A. (2020). The Contribution of Maurice Allais to Contemporary Macroeconomics: From French Planning to National Accounting. *Theoretical Economics Letters*, 10, 334-355. <https://doi.org/10.4236/tel.2020.102023>

Received: December 10, 2019

Accepted: April 20, 2020

Published: April 23, 2020

Copyright © 2020 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

If the history of macroeconomics is still largely associated with John Maynard Keynes' masterpiece, *The General Theory of Employment, Interest and Money* (Keynes, 1936), macronomics also includes a branch of economics which has gained recognition through the use of mathematical models, the notion of general equilibrium, the development of an empirical basis (applied economics), and the evaluation of the effects of economic policy. These elements of macroeconomic theory are found in Maurice Allais' work, mainly his *Théorie du rendement social* (Allais, 1946) and his *Fondements comptables de la macroéconomie* (Allais, 1954). In the aftermath of the Second World War, Allais was able to use a corpus composed of a *theory*—the Walrasian General Equilibrium, a *doctrine*—competitive planning, an *empirical basis*—his work on national accounting and economic policy prescriptions, “la planification à la française” and monetary dynamics. This work, combined with the development of national statistics and national accounting, highlights the French tradition of economic thinking and reminds us, that in the history of economic thought, the Keynesian precepts took some time to “colonize” the minds of French economists.

Keywords

Macroeconomics, Money, National Accounting, Planning, State

1. Introduction

In an article published in December 2005 entitled *The Theory and the Modelling of Macroeconomics, from yesterday to today*, Michel de Vroey and Pierre Malgrange (2005) sought to track the evolution of macroeconomics from its birth

(in the 1930s) to the 21st Century. In their view, the notion of macroeconomics should cover the following conditions: “*First, it is a modelled discipline, i.e. composed of mathematical models. Second, it pursues a general equilibrium approach, focusing on an economy as a whole but represented in a simplified way (small number of markets, representative agent hypothesis, etc.). Third, macroeconomics is an applied discipline, with abstract models that can be measured empirically. Finally, macroeconomics has an economic policy focus. It should be used to forecast and evaluate the effects of alternative economic policies*” (2005: p. 2).

As a result of this definition, the authors proposed a narrow and linear history of macroeconomics. For them, it began with Keynes’ masterpiece, *The General Theory of Employment, Interest and Money* (Keynes, 1936). In his *Introduction to Keynesian thought*, Hansen (1967) recalls that “the literature of the years 1900 to 1936 saw many efforts, sometimes important, but often radically insufficient, to break the orthodoxy [Say’s Law] of automatic adjustment”. This theoretical renewal was formalised through the work of Hicks (1937). The famous IS-LM model, more or less accepted by Keynes (Hicks, 1973), popularized the main concepts of Keynesian theory. For generations of students and economists, it even embodied the essence of Keynesian macroeconomics (Hicks, 1967): “*It was undoubtedly the new attitude, which they knew I would adopt, that I had to be asked to give an account in the Economic Journal... of the general theory, as soon as it appeared. I was asked because I was expected to be an understanding and independent critic, which at the time was not easy to find. I had little time to write this report, so I was not... very satisfied with it. After only a few months, I had the feeling that I had to do it again. The result was the article “Mr. Keynes and the Classics” with the SILL diagram that has appeared in so many manuals since then. For many students, I fear, this is Keynes’ theory. In fact, this diagram was only designed to present what I thought was an essential part of Keynes’ theory. As such, I think it is defensible; but I have never considered it complete in itself*” (Hicks, 1967, p 25-26). The formalized model made it possible to give substance to certain proposals concerning economic policy. Tinbergen (1953, 1961) considers that “*the difficulty facing the economic policy adviser is that the model must not only be realistic, but must also be usable*” (1961: p. 51).

One could continue this story by evoking the criticisms by Friedman (1968), Lucas (1972), Kydland and Prescott (1977), and so on. From a methodological point of view, such an approach makes it possible to understand the emergence of a masterpiece (Keynesian theory has its origins in the Great Depression of 1929 and tries to provide a response to mass unemployment), to understand its relevance (particularly in terms of its different variants), and to analyse the criticisms made against it. However, at the same time, it excludes all the theoretical work and formulations that do not fall into this predefined framework. In other words, defining a family tree of macroeconomics based on Keynesian theory risks excluding from the study all original or incremental contributions which

do not correspond to the analysis grid itself. Moreover, to postulate that the history of macroeconomics starts from Keynes' general theory is to overestimate its power of attraction and diffusion. In France, some specific features of the French model (French planning, economics teaching in law schools) delayed its dissemination and even its acceptance.

In terms of the history of ideas, these last two points suggest that we should be very careful when trying to grasp the major stages in the evolution of macroeconomics. The institutional context and the mixing of ideas play a significant role. Planning is part of French economic history, particularly after the Second World War. Studying macroeconomics without reference to this institutional framework makes it impossible to understand the degree of relevance of econometric models and the scope of economic policy decisions. Similarly, in France the applied economist is the emblematic figure of economic forecasting institutions (Commissariat au Plan, in France). The Grandes Ecoles (Ecole des Ponts et Chaussées, Ecole des Mines) are very often places where economics is mathematized and models are formalized. In the French context, major economic issues cannot be studied without taking this into account, which leads us to introduce the work of Maurice Allais (Nobel Memorial Prize in Economic Sciences), and more precisely his work with a macroeconomic dimension. Maurice Allais' work is part of a macroeconomic perspective, in the sense that it is: 1) contextualized, it is the era of the applied economist and French planning; 2) associated with an approach in terms of general equilibrium (global quantities); 3) based on mathematical models; 4) linked to an observation of facts (applied economics); 5) provides economic policy recommendations.

This paper focuses on presenting Allais' contributions to macroeconomics. First, we will present the post-war institutional context, including the choice of the economic system. We will see that this choice (planning) makes it possible to understand the particularities of French growth. Firstly, we will show that the antagonism between planism and the market economy is reflected in the work of Maurice Allais (1947a, 1949, 1950, 1951) by the evocation of a third way, "Competitive planning". Secondly, we will discuss three aspects of Allaisian macroeconomics: the accounting framework (Allais, 1954), the place of money, and the different aspects of its growth theory.

2. Macroeconomics and the Economic System

In a book entitled "Les voies de la recherche macroéconomique", Edmond Malinvaud (1991) introduced chapter 2 with the following question: "Is it necessary to have chosen a doctrine?" (1991: p. 41). Almost 20 years later, Edmond Malinvaud (2010) gave an unequivocal answer to this question: "*The history of economic thought shows that the theorists who contributed to the development of growth theories were each based on an economic system. As a result, in the early post-war years, the choice of this system seemed crucial to the various trends in our profession*" (2010: p. 141). This preamble says a lot about the path that had

to be taken in the aftermath of the Second World War to build the first macro-economic models (beginning of national accounting, development of national statistics, mathematical economics, etc). It also reminds us that from 1946 onwards, many countries were involved in a planning process (Shonfield, 1967), even the most practiced (United Kingdom) in the principles of free enterprise (Malinvaud, 1950).

2.1. French Planning

France was no exception to this trend (Fontvieille, 1977; Margairaz, 1992). Jean Fourastié and Jean-Paul Courthéoux (1968) cite three main reasons for implementing the plan in France: 1) the state of deep disorganization the economy was in (the first plan was a rescue action—there were no savings, the currency was constantly depreciating, companies could not produce anything without the help of the state; the notions of reconstruction and key sectors were important); 2) the weakness of the political liberal right-wing parties (three parties—the Communist Party, the Socialist Party and the M.R.P had all the seats in the Chamber of Deputies); 3) the intellectual initiative of a man, Jean Monnet, who was sufficiently well known that the planning project was credible (Fontaine, 1962). It was following a note sent by Jean Monnet to General De Gaulle (4 December 1945) that France set up a new institution on 3 January 1946. Attached successively to the Minister of Finance (10 July 1954), then to the Prime Minister (10 May 1962), the Office of Planning (Commissariat au Plan) was an economic commission, consisting of only a limited number of high-level officials, fifty people, under the authority of a Commissioner General.

French planning reflects a transformation of decision-making mechanisms. It must rely more on optimistic assumptions about long-term prospects for growth (production and consumption) than on short-term economic fluctuations. Market mechanisms are not abandoned; however, a coherent set of measures had to be put in place, as governments sought to ensure that companies complied with the schemes outlined. The spirit of modernity of French capitalism thus resided in the close relations that united industry, banking, finance, and the state (Bleton, 1966). More precisely, it was a deliberate cooperation between officials and the managers of large companies (Bilbault, 1961; Kuisel, 1984), in the search for a “concerted economy” where the public and private sectors could coexist (Bloch-Lainé, 1959; Monnet, 1976). Three periods, and three men, reflect the success of planning: from the creation of the Plan to the ECSC (1946-1951); the advent of the Treaty of Rome (1951-1958); Plans III, IV and V (1959-1970). In what follows, we will only deal with the first two periods (1945 to 1952), which make it possible to identify Maurice Allais’ contributions to macroeconomics.

2.1.1. From the Office of Planning to the European Coal and Steel Community (1946-1951)

The first stage is from the creation of the Office of Planning to the creation of the European Coal and Steel Community (ECSC: 1946-1951). Against the back-

ground of the Marshall Plan and the creation of the OEEC (Organization for European Economic Cooperation), Jean Monnet's first plan focused on economic growth (objective of 25% in 1951 of the 1929's production in 1929) and raising living standards. In this context, the Office of Planning was first and foremost a place for meetings and information. Decisions were made in committees (Gournay, 1961). These were roundtables during which people interested in a subject met and discussed (so that anyone with expertise in a specific field could be called upon to participate in the debate). Ministries, The Grandes Ecoles (engineers from Ecole Polytechnique, Ecole des Mines, Ecole des Ponts et Chaussées), mixed economy companies and public companies such as EDF, SNCF, and the nationalised coal industry, were involved in the work of the plan committees at an early stage. In this way, the plan was not imposed on them, it was an expression of their participation in the French economy's recovery. At the same time, the planning officials had an effective means of persuasion and encouragement (Rissoyre, 1961). Tax measures, direct financial aid, financial provisions (loans from Caisse des Dépôts et Consignations, Crédit National (Dupont, 1952), capital market interventions, industrial bonds subject to prior authorization by the Treasury, etc) were intended to encourage the selected companies to comply with the orientation and scale of the Plan objectives (Shonfield, 1967, refers to "Conjuring the Plan").

2.1.2. From the ECSC to the Treaty of Rome (1951-1958)

Under the authority of Etienne Hirsch (a mining engineer), the 2nd (1954-1957) and 3rd (1958-1961) Plans were drawn up between the creation of the ECSC and the creation of the EEC. The 2nd plan differs from the 1st plan by a series of provisions. Firstly, the plan is expanded from the five key sectors to a larger number of sectors. This shift from partial to broader planning moved the Plan from a series of individual programs to an overall plan. During this period, a notion was quickly established for economists: that of balance. The notion of balance has the advantage of applying to many situations. There is the balance of employment, the balance of income, the balance of foreign trade. Secondly, there was the development of information and forecasting techniques. Three major institutions were created. The first institution was the Financial and Economic Studies Service (SEEF) (1950). The determination of the balance and the description of economic activities were made possible by the progress in national accounting. National accounting, essential for planning, did not exist before 1950 (Sauvy, 1970). With the SEEF, national accounting took off in an unparalleled way (Fourquet, 1980) and developed along two axes. Firstly, it was a question of developing an instrument intended essentially to draw up economic budgets (forecasts over one or two years, drawn up by the Committee of Experts). The next step is to propose an alternative system to international standardisation (the first version of the OEEC system). In a note published in 1952 entitled "Principles for the establishment of national accounts and an economic table", Claude Gruson, who had built up a small team of experts (Terray, 2003),

proposed a more ambitious project than the principles prevailing at the international level (Gruson, 1968). He aimed to present a system of national accounts that takes into account the flows of goods and services; inter-industry trade based on the concept of sector of activity; and financial transactions. All this was to be summarized in an economic table (Vanoli, 2002). Thus, from 1952 to 1976, France had an original accounting system, very different from the OEEC standardised system (Stone, Aukrust and Marczewski were the main authors). In the same year, Edgar Faure created the National Accounts Commission, thereby renewing the work of the Committee of Experts and the SEEF's missions in the field of national accounts and provisional accounts (known as economic budgets). The French State could thus count on a threefold combination: the SEEF, which was attached to the Ministry of Finance, made it possible, through the intermediary of national accounts, to generate fruitful exchanges between the same Ministry, the Planning Commission, and the Treasury Department.

In 1956, a partnership agreement was signed to strengthen the relationship between the Plan and the SEEF (the SEEF created a division responsible for making medium- and long-term forecasts for the Plan). During this period of intense activity, the SEEF acquired a scientific reputation thanks to the publication of its notes and reference articles in the *Journal of Statistics and Financial Studies*. Its executives (Claude Gruson, Charles Prou, etc) taught at the *Ecole Pratique des Hautes Etudes*, at the Faculty of Law of Paris, at SciencesPo and at the ENA (National School of Administration). New generations were thus trained in the tools of national accounting and statistics (Fourquet, 1980). The French tradition of applied economist (Mines, Ponts et Chaussées, Polytechnique) had been brought up to date.

The second institution is associated with an important technique, the forecasting of employment from 1952 onwards. As economic problems arose, planners focused on the most important “balance”—the employment balance. Employment forecasting problems became the “*keystone of economic planning*” (Fourastié & Courthéoux, 1968: p. 55) because they were at the same time the synthesis, consequence, and condition of economic growth. The Labour Board set up meetings bringing together a small number of people from the Office of Planning, INSEE (Institut of National Economic Statistics), and various economic sectors (agriculture, car industry, textiles, etc.).

The third institution is Center of Research for Studies and Observations of Life Conditions (CREDOC) created in 1953. Intended to enlighten the experts of the French economy on the needs and development of consumption, CREDOC played an important role. On the one hand, it participated in the Office of Planning forecasting efforts (consumption plays a key role in determining the economic balance). On the other hand, it played an important role in the field of business economics (in particular in the conduct of market research). Thus, with CREDOC, French planners had at their disposal relevant data (sample surveys) on the measurement, study, and forecasting of consumption. All the results of

the work were published in the journal *Consommation*. Despite unfavourable prospects pronounced by the British and American authorities, the 2nd plan had spectacular effects. From 1955 to 1958, productivity increased by 8% per year in the processing industries, the highest rate of all European countries.

2.2. The “Competitive Planning” of Maurice Allais

It is customary to recall that Maurice Allais received the Nobel Prize in Economics (1988) for two books, the *Treaty of Pure Economy* (Allais, 1943) and *Economy and Interest* (Allais, 1947b). It seems that a third work played an equally important role in the eyes of its author. Called *Abundance and Misery* published in 1946, with the evocative subtitle “Heterodox proposals for the recovery of the French economy”. In this book, Allais (1946) seeks to overcome the opposition between *laissez-faire* (free enterprise doctrine) and centralized planning, by proposing a third way, “competitive planning”, which aimed to combine “*the fundamental advantages of a market economy with those of conscious action by the State in accordance with a Plan for a more efficient and fairer economy*” (1947a: p. 1).

Maurice Allais (1948) stated that “*Laissez-fairism led the Liberals to the conception of an imaginary world of perfect competition, in which the problems posed by production, distribution and the adaptation of production to distribution were solved*” (1948a: p. 13). In his view, their fundamental error was to believe that this theoretical image was the representation of an order, to which the existing regime was approximately and sufficiently compliant. On the theoretical level, *laissez-faire* had introduced two biases: the representation of the legal regime of property and contracts, governed by a natural law revealed by God; the idealization of a perfectly competitive economy and the rejection of any interference by the state. In practical terms, *laissez-faire* could never solve the five fundamental problems of organizing production, distributing income, promoting the best in society, achieving an effective and equitable international order, and adapting the different sectors of the economy to each other. In the field of the organization of production, *laissez-faire* combined the stimulus of competition and the role of self-interest. However, for Allais the competition/self-interest relationship could not be justified. Here Allais defends the thesis of the existence of an “organized competitive economy”, inspired by Léon Walras. Interest, economic freedom, and competition cannot be three harmonious components of an economic and social force that would automatically drive the economy to the optimum. “*Essentially beneficial, competition is possible, but it is not spontaneous or automatic and can only necessarily exist within the framework of the law*” (Allais, 1946: p. 1). In the field of distribution, *laissez-fairism* would confuse optimum management with the optimum distribution. Some economic situations (existence of monopolies, failure to take into account the problem of unemployment, deterioration of working conditions through human exploitation, presence of immoral profits from inflation) have undesirable social conse-

quences: “the competitive-based pricing system has gradually been abandoned because, under rapidly changing structural conditions, it leads, if one is not careful, to a distribution of clearly unacceptable consumable services” (Allais, 1946: p. 36). In the field of social promotion, *laissez-faire* would lead to a struggle between the different social classes and the predominance of industrial elites (the business world) over spiritual elites (the world of art and culture). If economic efficiency does imply a free competitive economy, the economic dimension could be only one aspect of human activity. Other equally important values must be taken into consideration. In the international arena, *laissez-faire* would lead states to practice autarchic and totalitarian policies. Some imbalances had even contributed to international conflicts and the development of nationalism.

Totalitarian doctrine, for its part, had always attributed the evils from which humanity suffers to the competition-based system. Maurice Allais associates the birth of planism with the collapse of liberalism during the 1929 depression. Rejecting economic organization based on the principle of competition, the totalitarians advocated the use of a centralized management for the entire economy. “*Whenever it has predominated, the action of authoritarian planners has been carried out without a specific program, without general or long-term views. Only the principle of recourse in all things to the authority of the State has been universally and permanently accepted*” (Allais, 1950, 1951: p. 28). In theory, totalitarianism is based on the idea that there should be a central authority (all-powerful civil servants) capable of effectively planning, organizing, and managing a complex economy. To achieve this, however, it is necessary to be able to know the lives, tastes, and abilities of hundreds of millions of individuals: “*It is absolutely impossible for a human brain to see clearly enough the direct and indirect consequences of a change in the quantities produced or distributed throughout the economy so that it can best adapt the techniques used and the production to our current situation, and so that it can direct the economy, even approximately, towards its position of social return*” (Allais, 1946: p. 20). In practical terms, totalitarianism would be as ineffective as *laissez-faire*. In the field of the organization of production, central planning has resulted in huge waste. In the absence of factor prices, the answer to economic problems can only be arbitrary: “*It is absolutely impossible to verify whether the use of a particular factor of production, for example coal, is actually more useful in one production than in another*” (Allais, 1946: p. 18). In the field of distribution, central planning has never succeeded in achieving an equi-revenue distribution. Only a few have been able to secure abnormally high incomes and benefit from successful activities: “*It cannot be otherwise in a system where, on the one hand, clandestine activities offer extraordinarily high opportunities for gain and where, on the other hand, salaries and wages are set in a bureaucratic and monopolistic manner, at random political contingencies, regardless of any reference to the true scarcity and usefulness of the services rendered*” (Allais, 1946: p. 25). In Allais’s view in the field of social promotion, central planism has replaced the game of political intrigue by

that of merit, thereby destroying the stability and dynamism of society. In the international sphere, central planism has generated a form of trade restriction (protectionism and autarky). However, the development of trade is a prerequisite for wealth creation and the working together of nations.

Faced with the mistakes of *laissez-faire* and totalitarianism, Maurice Allais proposed a third way (for Europe)—*Competitive planning*. By competitive planning a solution can be found to the five fundamental problems (economic management, distribution, social promotion, international order, stability). From an ideological point of view, competitive planning consists of reconciling and harmonizing the aspirations of free enterprise and socialism, the principles of free enterprise and the social justice inherent in Marxism (Allais, 1949). It is sometimes confused with “*competitive socialism*” (Allais, 1947a) and the promotion of left-wing elites. Like Leon Walras, Maurice Allais does not hesitate to call himself a social liberal or a liberal social: “*We are convinced that the competitive idea has an immense future, but our conviction, which is growing every day, is that only men whose social aspirations are in their very foundations those of left-wing parties can succeed in implementing it effectively*” (Allais, 1949: p. 7). From a practical point of view, competitive planning had to combine “*the action of the regulatory mechanisms essential to maximizing social return, achieved through the law of supply and demand in a market economy, with systematic intervention by the State for purposes deemed rationally desirable, i.e. methodical action within a given general framework*” (Allais, 1950, 1951: p. 28). This new approach therefore leads to a paradoxical statement. If self-interest, guided by economic freedom, was indeed the driving force, this freedom could not be allowed to degenerate into anarchy. It has to be organised by law within a legal framework which satisfies the general interest. For Maurice Allais, the debate was finished. The essential condition for economic freedom is the all-powerful authority of the state, “*between the strong and the weak, it is freedom that oppresses and the law that liberates*” (Allais, 1950, 1951: p. 29). The use of the market economy is thus both a technical necessity (the famous rules of competition) and a legal necessity (the role of the legislator).

If competitive planning occupies a central place in Maurice Allais’ liberalism (the “*discipline of freedom*” is necessary), it is also original from the point of view of the historical context. By using this term, Maurice Allais meant:

- To make a distinction between centrally planned economies from those with a plan. To avoid any confusion, Maurice Allais called “*planned economies, not all economies with a plan, but only those where all economic operations tend to be directed by a central authority. Planism, or centralized dirigisme, regulating through central planning the entire system of production and consumption is opposed to competitive dirigisme, organizing economic freedom within the framework of the law*”. By this distinction, Allais (1947a: p. 1) intended to make the Plan a key idea in the dissemination of his work (to propose planning in the liberal sense), but also to recall that planism con-

tinued to gain ground (Shonfield, 1967) to the point that, “*nowadays, there is hardly any longer a single political grouping on the surface of the globe which, on the pretext of applying reason to the organization of society, does not want to entrust most human activities to centralized bodies and deliberately shape society in every detail*”.

- To disassociate himself from Friedrich Hayek’s very dogmatic position (his categorical refusal of any collectivist property and any intervention by the state). Having participated in April 1947, with Milton Friedman, Ludwig von Mises, Friedrich Hayek, Franck Knight, Lionel Robbins, George Stigler, and others at the meeting of the Mont Pèlerin Society, Maurice Allais refused to sign the founding text (Diemer, 2007). He justified this refusal by recalling that he had always been a supporter of collective ownership whenever the economic structure of a sector could not be competitive (Allais, 1946, 1948b). Maurice Allais (1950, 1951) was called upon to defend this position as President of a European Commission on Transport.
- To introduce a distinction between the economic technique used (competition) and the associated ownership system. If a competitive idea originates in the private ownership of the means of production, it is impossible to take a stand against the collectivization of the means of production. Maurice Allais (1949: p. 5) put forward two arguments to justify this observation. On the one hand, collectivization offered many social benefits in terms of distribution. On the other hand, the ineffectiveness of collectivization was by no means scientifically proven. Therefore, only facts can provide us with the required evidence: “*In fact, only effective experience could show whether, in the current state of our political education, the system of collective ownership of the means of production is, or is not, more favourable to the functioning of a competitive economy than a system of corporate ownership*”. With regard to the organisation of the economy and the ownership of the means of production, Maurice Allais took into account the existence of four main situations (as in Table 1 below).
- To place the heritage of the classics and neoclassics in its rightful place while breaking with the “Keynesian and New-Keynesian dirigism” thinking (Allais, 1943: p. 4). Following the Great Depression of 1929 and the “liberal debacle”, this new science of “global quantities” began to seduce a large part of Western governments. If Allais had supported John Maynard Keynes’ *General Theory of the Employment, Interest and Money* (Keynes, 1936), he could not accept its interpretation and implementation (all-out intervention by the state in economic activity, conception of rigid prices), which were both

Table 1. Organisation of the economy and ownership of the means of production.

	Private Ownership	Collective Ownership
Market Economy	Western Economies	Yugoslav Experience
Central Planning	Corporatist Economies (Fascist, Nazi)	Communist Economies

Source: Allais (1967: p. 105).

contradicted by the facts: “*It can be said of Keynesian theory that it is only true to the extent that it takes up and develops results already known by the classics, and that, where it is actually original, it is contradicted by the facts. It is worth noting that such an extreme judgment, however extreme it may seem at first sight, was shared by one of today’s most prominent Keynesians in a particular conversation we had with him recently. He even pointed out that it was certainly fortunate for us to have come to economics only after 1940 and to have escaped the so seductive influence of Keynesian thought*” (Allais, 1943, footnote 5: p. 5). If the state was to intervene in the economy, it could only be following irrefutable scientific evidence. However, only the *Theorem of Social Return* (Allais, 1943) could provide decisive arguments for this question.

3. The Accounting Basis of Macroeconomics

Macroeconomics proposes an analysis of the basic behaviour of economic agents and a study of the different balances that occur according to the degree of rigidity or flexibility of prices and wages (Artus, 1989). We have seen earlier that the accounting framework of an economy is a powerful tool for information and modelling. National accounts appeared during the Second World War. The White Paper and the Standard National Accounting System were the first standardised systems (Klotz, 2010). All this work developed as a result of Keynes’ General Theory. It is in this context of intellectual effervescence that Maurice Allais (1954) published his book *Accounting Foundations of Macroeconomics*. As the author indicates from the first pages of the introduction, this 1954 book was the end result of four previous editions in July 1945, September 1950, November 1951, and March 1952. The study aims “*to establish in a rigorous and synthetic way, based on the summation of the accounts of the various economic agents, consumers, companies, credit banks, issuing institutions and the State, the main accounting relationships that necessarily exist between the global quantities usually considered and to try to show the multiple applications of these relationships, including accounting theory, national income theory, currency and credit theory, capital and income theory, dimensional economic analysis theory, savings and investment theory, inflationary profit theory and economic dynamics theory*” (Allais, 1954: p. 1). The book has two parts. The first part specifies the accounting relationships between global quantities. It consists of three chapters: 1) the basic model associated with elementary accounting, 2) the case of an economy without state activity, 3) the general case of an economy with state activity. The second part puts accounting relationships back into the study of macroeconomic facts: national income, currency, savings, investment...

3.1. The Assumptions of the Model

The model is based on five assumptions: 1) the activity of a business is any indi-

vidual activity that does not correspond to the use of income for direct consumption; thus any purchase of durable goods by an individual will be considered as a business activity; 2) the economy is considered to be closed (no international trade); 3) there is an institution that can issue money; 4) the circulating currency is composed of fiduciary and scriptural money; 5) the overall monetary inflation is itself broken down into the monetary inflation of the central institution (central bank board) and banking inflation (creation of money by commercial banks).

3.2. From Private Accounting to Macroeconomic Accounting

The basic accounting policies are based on a company balance sheet. It should be noted that the gestation period of Allais' book was in a period during which attempts were being made to standardize private company accounts. In 1927, Maurice Allais, then 26 years old, was in charge of the sub-district of the Nantes Mining and Quarrying Department, which included five departments, and a number of controls, in particular the railways of general and local interest. At that time, Allais had to control private companies under public contracts. It is therefore through this experience (he was constantly confronted with very disparate accounting practices from one company to another) that he would be led to write a first study on the standardization of private company accounting. This study was published in 1938 (Allais, 1938a, 1938b, 1938c) under the title *The extension of economic documentation services and the reform of private accounting* in four journals, *Economic Humanism* (May-June); *Orga* (August); *Chief Accountant* (November), and the *Bulletin du syndicat national des contributions directes* (December). These works, widely commented on in the ministerial commissions (Archives of the Ministry of Economy and Finance, Savigny le Temple), were at the centre of a debate (Lemarchand, 1999). Until the 1930s, two justifications for the role that accounting should play were in conflict. For some (Delmas 1898, 1900, 1905), accounting which resulted in concerted action by companies would reduce price competition and maintain cartels. For others (Coutrot, 1937), accounting made it possible to define a method of calculating costs that could rationalize management practices. At the end of the 1930s, the first work on national accounts and the creation of a French planning system required manufacturers to go further than just standardizing cost calculation methods. It became necessary to provide the future State Statistical Observation System with accounting data that were sufficiently homogeneous to be aggregated.

This need was all the more pressing since Germany had adopted its chart of accounts in 1937 and during that same year, the conduct of a production survey revealed the difficulty of collecting useful data in the absence of uniform accounting practices (Margairaz, 1991). It was in this context that Maurice Allais (1938b), a young mining engineer, proposed a standardization of private company accounts aimed at substituting social collaboration for the law of the jungle:

“Either we will renounce any private or public action on the economy or we will move towards a policy of collaboration aimed at simplification and progress and we will be unable to do anything unless we have standard accounts that constitute the essential and primordial condition of any rational economy” (Allais, 1938b: p. 279). However, it was not until the years of war and occupation that Allais’ wishes were granted. A first accounting standards commission, initiated by COST (Scientific Organization Committee of Labor) and chaired by Jean Coutrot, was set up in July 1939. Two years later (April 1941), a second commission led to a draft chart of accounts known as the 1942 chart of accounts. This chart of accounts was soon abandoned and a third commission was set up in April 1946. The cost accounting of operations was finally present in the 1947 chart of accounts.

3.3. The Balance Sheet and Basic Accounts Method

The balance sheet and basic accounts method of private company accounts is present in the accounting relationships of the macroeconomics for a national economy (meaning correct?). Maurice Allais used an ownership approach (assets/liabilities) to the company’s balance sheet and accounts rather than a use of resources approach (which is in the standard presentation). A company’s simplified balance sheet is composed of assets (unamortized assets, inventories, cash and cash equivalents) and liabilities (net debt, net assets).

	Assets	Liabilities
Unamortized Fixed Assets	C_{IM}^i	Net Debt ε_N^i
Inventories	C_{Σ}^i	Net Assets a_N^i
Cash and Cash Equivalents	M_p^i	

This balance sheet allows Allais to introduce the question of opening a credit granted by a bank to a company, increasing net debt on the liabilities side and increasing bank availability (bank credit).

The net assets can be expressed as follows:

$$a_N^i = C_{IM}^i + C_{\Sigma}^i + M_p^i - \varepsilon_N^i \quad (1)$$

This is followed by the current national accounts transactions. The company pays salaries S^i , pays for supplies F^i , and capital goods R_I^i . It pays its creditors amortizations A_e^i and interest I_e^i on its debt. It pays dividends D_e^i to its shareholders and pays sums in respect of loans it grants and subscriptions for new shares R_p^i . It collects the amount of its sales V^i . It receives amortizations A_e^i ; interest I_e^i , dividends D_e^i , in respect of the loans it takes out and the issuing of new equities R_p^i . The company receives a loan (dM_t^i/dt) and increases its cash flow (dM_p^i/dt).

The gross operating income (R_e^i) of the operating account is equal to the

value of sales less the total amount of salaries, supplies, and bond interest:

$$R_e^i = V^i - (S^i + F^i + I_D^i) \quad (2)$$

Allais then analyses the company's "Profits and loss" account by presenting the concepts of gross profit and net profit. Profit is expressed on the basis of the net assets (before and after) distribution of dividends, depreciation and amortization and receipts. The simplified balance sheet of the issuing institution takes the following form:

	Assets	Liabilities
Fixed Assets	C_{IM}^m	Net Debt ε_N^m
Cash and Cash Equivalents	M_p^m	Net Assets a^m

$$a^m = C_{IM}^m + M_p^m - \varepsilon_N^m \quad (3)$$

Allais assumes that only the issuing of fiduciary money leads to changes in the balance sheet. In the case of a fiduciary money currency issue, the cash available increases.

3.4. Sum of the Elementary Accounts

Allais distinguishes between two cases—1) an economy without state activity; 2) an economy with state activity.

3.4.1. An Economy without State Activity

These operations of summing the elementary accounts make it possible, on the one hand, to define the main macroeconomic aggregates used by Allais, and on the other hand, to understand how the accounting foundations of macroeconomics are connected to his *Treaty on Pure Economy* and *Economy and Interest*. Indeed, unlike national accounts, which use the production account to introduce production, intermediate consumption and the balance—value added, Allais uses national capital and consumption (national income consumed) to capture national income. This choice may seem paradoxical, but it allows us to put the *Treaty on Pure Economy* and *Economy and Interest* book back at the heart of Allais' research, namely the theory of capital and interest.

A detour to *Economy and Interest* (1947) is necessary here (Allais, 1947b). In Chapter IV entitled *Interest, Capital and Capitalization*, Allais clarifies the role of the interest rate in economic management while seeking to make corrections to classical theory. In particular, in §10 Summation of capital and income—*it is essential for the understanding of interest and capital theory to have a clear view of the income flows that are established in the economy and the relationship between capital and income*. Allais adds that this can be achieved simply by summing, on the one hand, the capital available to individuals and, on the other hand, the income they received and spent. "*In the general case, this study is relatively delicate and requires long developments to be rigorous. However, in order*

to understand the essential links between capital and income, it is possible to simplify and obtain a view that is both simple and sufficiently close to reality" (Allais, 1947b: p. 80). It is not difficult here to make the link between the theory of capital and interest and research on accounting equations. This link is further clarified by Allais in a footnote: "The following developments are therefore not intended to be rigorous, they neglect all corrective terms and only take into account essential elements. In fact, we intend to publish soon a general and rigorous theory of the summation of capital and income, where the reader wishing to explore this delicate issue can find all the necessary additions, under the title "Accounting Principles of Macro-Dynamic Economics" (Allais, 1947b, note 37: p. 80). Thus, the idea is clear and Gérard Klotz's conclusion takes on its full meaning here: "despite his many references to accounting, Maurice Allais has not built a private and national accounting system in the usual sense of the term. It has continued on the arid paths of theory without questioning the practical and political feasibility of its accounting" (Klotz, 2010: p. 167). As such, Allais' book is indeed a textbook of macroeconomic theory, even if from the point of view of the applied economist, it makes it possible to account for the relations between economic agents. But coming back to the aggregate equations, Allais reviews different concepts (national capital, national income invested, net wealth of individuals, national income distributed, national income consumed, national income invested, employment of distributed income, value added, operating income, financing of investments, etc.), some of them play an important role and allow him to introduce theoretical contributions in the field of macroeconomics.

→The increase in national capital is equal to the sum of national income invested (investment), net capital gains (capital gains minus depreciation) and inventories.

$$\frac{dC_N}{dt} = R_I + (P_{IM} - A_{IM}) + P_{\Sigma} + A_{\Sigma} \quad (4)$$

The net wealth of individuals is equal to the national capital.

→Total value added is equal to the sum of income consumed, income invested, increase in value of old fixed assets and inventories.

$$V_A = R_C + R_I + (P_{IM} - A_{IM}) + (P_{\Sigma} + A_{\Sigma}) \quad (5)$$

→The national operating income is equal to the excess of the amount of consumption and investments divided by the sum of wages and interest distributed.

$$R_{\varepsilon} = R_C + R_I - S - I_D \quad (6)$$

However, this relationship may be expressed in a different way,

$$R_{\varepsilon} + R_p + \frac{dM}{dt} = R_I + A_D + D_D + \frac{dMp}{dt} \quad (7)$$

Thus, the total amount of operating income, invested income (the amount of individuals' investments per unit of time) and monetary inflation is spent by all companies on investments (Allais defines self-investment as the difference between investments and securities), depreciation, dividends and increases in their

monetary availability (knowing that an increase in inflation should encourage them to restore their liquidity).

→ Investment is composed of spontaneous investment by individuals (distributed income minus income consumed), self-saving by the production sector and forced investment (part of inflation that is used for expenditure by the production sector).

$$R_I = R_P + R_{\varepsilon ND} + \left(\frac{dM}{dt} - \frac{dMp}{dt} \right) \quad (8)$$

Allais deduced from this that forced investment is equal to the increase in the overall amount of individuals' monetary availability, and more precisely to the increase in the quantity of scriptural money.

→ Final domestic production is related to final sales, according to a double relationship. Companies' overall production (calculated on the basis of selling prices) is either sold or stored

$$P = V + A_{\Sigma} \quad (9)$$

The final production is distinguished from the overall production:

$$P_F = P - F \quad (10)$$

According to Allais, this distinction is necessary because most companies only produce raw materials and semi-finished products that are not involved in the final production (double accounting principle). The final production can thus be written:

$$P_F = R_C + R_I + A_{\Sigma} \quad (11)$$

It is equal to the total value of final consumption, investments, and stock increases. By removing stocks, final sales may be defined. According to Allais, this amount represents “*the overall final consumption of the community*” (Allais, 1954: p. 35).

→ From the national income that Maurice Allais describes as net national income, it is possible to define the undistributed national income:

$$R_{NND} = R_{\varepsilon ND} + (P_{IM} - A_{IM}) + P_{\Sigma} + A_{\Sigma} \quad (12)$$

The latter is equal to the undistributed national operating income ($R_N - R_D$) plus the net capital gain on fixed assets and inventories.

→ This aggregate is used to calculate total net savings:

$$E_N = E_S + R_{NND} \quad (13)$$

Knowing that spontaneous savings (E_S) is equal to distributed income minus income consumed ($R_D - R_C$), or the sum of the income invested and the increase in individual cash balances:

$$E_S = R_P + \frac{dM}{dt} \quad (14)$$

By bringing spontaneous savings closer to investment and introducing self-investment (difference between $R_I - R_P$), it is possible to obtain the fol-

lowing relationship:

$$R_I - E_S = R_{IA} - \frac{dM_I}{dt} \quad (15)$$

Investment will be higher than spontaneous savings if self-investment is higher than the increase in individual cash balances. Corporate savings are defined as the excess of national savings over individual savings (i.e. spontaneous savings).

3.4.2. An Economy with State Activity

According to Allais, the above results can be generalized in the event that the state has an activity. It is sufficient to consider the state as “*a particular enterprise producing services, state services, which are sold either to enterprises or to individuals for a price represented by taxes*” (Allais, 1954: p. 49). The price/quantity adjustment thus continues to play its role. Taxes paid by companies to the state are comparable to payments made by companies to other companies for the purchase of semi-finished products. Taxes paid by individuals are similar to payments to businesses in return for purchases of consumer goods. By assuming that public finances are in balance (all expenses are covered by taxes), Allais can consider that taxes are comparable to prices paid for services rendered. This thesis of the producer state makes it possible to generalize the developments presented in the case of the productive activity of companies. According to Allais, this view would be consistent with Simon Kuznets’ work presented in his study *Government Product and National Income* (published in a collective book, *Income and Wealth*).

3.5. Accounting Relationships, Representation, and Economic Theory

The different relationships presented by Allais (definition and ownership relationships) make it possible both to describe a real economic circuit and to identify the meaning of the quantities used in economic theory.

1) The overall equations start from the theory of interest and capital, in other words from the variation of national capital, and of consumed income (consumption) to define national income. National income is broken down into salaries, interest on national capital, and net profits. Gross profits are broken down into net profits and interest associated with net assets. They can be distributed (dividends will be paid with the salaries and interest distributed, the income distributed, which will itself be broken down into cash balances, income invested and income consumed), or not distributed. Undistributed income can be used to introduce capital gains (less depreciation), inventory gains and inventory growth. This allows the calculation of the change in fixed assets and, ultimately, the change in national capital.

2) Accounting relationships highlight the properties of economic quantities and theories and the links between them. We will only present here some appli-

cation illustrations.

→ **The theory of company accounting:** refers to the balance sheet, the income statement and the profit and loss account. The accounting equations that link these accounts define profit. At equilibrium, the profit is zero (the value in use of a property is equal to the interest of its value less its capital gain;

→ **National income theory:** gross national product is the sum of personal consumption, investment, the increase in private stocks, purchases of government goods from the corporate sector, and the value of civil servants' services.

$$P_{NB} = R_C^1 + R_I^1 + A_\Sigma + R_I^2 + R_C^E + S^2 \quad (16)$$

According to Allais, the gross national product is less than final production (double accounting principle). The difference comes from the way in which the state's activity is included in the calculations.

Three fundamental relationships highlight three possible definitions of national income (with three different calculation methods):

$$\begin{aligned} R_N &= S + I + B \\ R_N &= R_C + R_I + (P_{IM} - A_{IM}) + (P_\Sigma + A_\Sigma) \\ R_N &= \sum V_A^i \end{aligned} \quad (17)$$

We find here the calculation of national income as a function of: 1) the sum of the remunerations of the different factors of production, 2) the total value of consumption and the increase in national capital, 3) the sum of the added values.

→ **The theory of money and credit:** the breakdown into fiduciary money (M_M) and scriptural money (M_S) leads Allais to consider that credit inflation is translated for accounting purposes as manual money inflation.

$$\frac{dM_I}{dt} + \frac{dM_P}{dt} = \frac{dM_M}{dt} + \frac{dM}{dt} \quad (18)$$

An increase in the monetary availability of all economic agents cannot be conceived without an increase in the fiduciary and non-cash money in circulation.

→ **The theory of savings and investment:** refers to macroeconomic equality ($I = S$) as described in the General Theory of Employment, Interest and Money of Keynes (1936). It is based on three equations:

$$\begin{aligned} S &= Y - C \\ I &= P - C \Leftrightarrow S = I \\ Y &= P \end{aligned} \quad (19)$$

According to Allais' accounting relationships, the system can be written as follows.

$$\begin{aligned} E_S &= R_D - R_C \\ R_I &= P_F - R_C - A_\Sigma \\ R_D &= P_F + \frac{dM_I}{dt} - R_{IA} - A_\Sigma \end{aligned} \quad (20)$$

Investments are classified as unsolicited investments, self-sponsored invest-

ments, and forced investments.

According to Allais, investment is not equal to spontaneous savings, investment is equal to spontaneous savings plus undistributed corporate income (itself equal to the difference between self-investment and changes in personal cash balances).

$$R_I = E_S + R_{\varepsilon ND} \text{ avec } R_{\varepsilon ND} = R_{IA} - \frac{dM_I}{dt} \quad (21)$$

In Allais' view, this questioning of equality ($I = S$) was a formal denial of the results of Keynes' General Theory: "*We believe that Keynes was a great economist who had remarkable intuitions, but whose reasoning requires many reservations. All these deductions, in our opinion, are absolutely lacking in rigour. Keynes' intuition made him feel where the difficulties lay, but his logical inadequacy did not allow him to solve the problems that his intuition had made him see... Year after year since 1931 Keynesian theory has changed and contradicted itself; and we can affirm with complete certainty that it will not cease to change and contradict itself until it no longer has anything in common with the original theoretical construction, if that is not perhaps the name of Keynes*" (Allais, 1954: p. 71).

4. Conclusion

While macroeconomics is often linked to John Maynard Keynes' work and his *General Theory of Employment, Interest and Money* (Keynes, 1936) it should be recalled that the period after World War II was marked by the memory of the crisis of the 1930s and the depression that followed (overproduction, price falls and mass unemployment).

The crisis, followed by the Second World War, provoked a massive intervention of the state in the economy (war expenses, social expenses), there was no question of the states withdrawing from the scene, despite calls for a return to free enterprise and the principle of competition. Capitalism and more precisely private investors were unable to reinvest in industry. States were therefore called upon to stimulate the economy and to become the key player in the renewal process. All the industrialized countries thus embarked on the path of planism, without denying their free enterprise roots (e.g. United States, Canada, Australia, and United Kingdom).

In France, planning very quickly served as a guide for economic policy. In the purest tradition of the Colbertist State, the plans were laid out by setting objectives for the private sector to achieve. It is in this context of state interventionism but also of opening up to competition that Allais' work should be placed. Beyond his work on pure economics and the theory of general equilibrium (which won him the Nobel Prize in Economic Sciences), Maurice Allais understood, from the 1930s, the importance of defining a national accounting framework. This information and modelling tool had given Germany an undeniable advantage during the war years. It was now time to use this framework to shape the

growth of tomorrow. In the 1940s and 1950s, Allais published writings constituted his *Accounting Fundamentals of Macroeconomics*. The aim was “to establish in a rigorous and synthetic way, based on the summation of the accounts of the various economic agents, consumers, companies, credit banks, issuing institutions and the State, the main accounting relationships that necessarily exist between the global quantities usually considered and to try to show the multiple applications of these relationships, including accounting theory, national income theory, currency and credit theory, capital and income theory, dimensional economic analysis theory, savings and investment theory, inflationary profit theory and economic dynamics theory” (Allais, 1954: p. 1).

Macroeconomics had thus emerged. It was based on a corpus consisting of a theory—the Walrasian general equilibrium, a doctrine-competitive planning, an empirical basis—his work on national accounts and economic policy prescriptions, French-style planning, and monetary dynamics. Maurice Allais’ work, combined with the development of national statistics and national accounts, highlighted the French tradition of applied economists while proposing an original approach in an environment marked by the broad dissemination of Keynesian ideas.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- Allais, M. (1947a). Le problème de la gestion économique: Planisme autoritaire et planisme concurrentiel. *La vie intellectuelle*, October, 50-81.
- Allais, M. (1947b). *Economie et Intérêt*. Imprimerie Nationale.
- Allais, A. (1946). *Abondance et Misère*, Editions Medicus.
- Allais, M. (1938a). *L’extension des services de documentation économique et la réforme des comptabilités privées*. L’Humanisme économique (may-june). L’Orga (August). Le chef de comptabilité (november) et le Bulletin du syndicat national des contributions directes, décembre.
- Allais, M. (1938b). *L’uniformisation des comptabilités* (pp. 219-222, 247-251, 277-280). L’Organisation.
- Allais, M. (1938c). Les conditions premières de toute action économique. *Le Chef de comptabilité*, november, 56.
- Allais, M. (1943). *A la recherche d’une discipline, Traité d’économie pure*. Paris: Clément Juglar.
- Allais, M. (1947). Le problème de la planification économique dans une économie collectiviste. *Revue Internationale des Sciences Sociales*, 3, 48-71.
<https://doi.org/10.1111/j.1467-6435.1948.tb02515.x>
- Allais, M. (1948a). Au-delà du laisser fairisme et du Totalitarisme. *Nouvelle Revue d’Economie Contemporaine*, April, 25-32, May, 26-32.
- Allais, M. (1948b). Les problèmes économiques et sociaux de l’Heure et leurs solutions.

- Bulletin des Transports et du commerce*, Novembre, 690-697.
- Allais, M. (1949). *Socialisme et libéralisme* (pp. 31-37). Bruxelles: Les Cahiers socialistes.
- Allais, M. (1950, 1951). Quelques réflexions sur la démocratie et le totalitarisme. *Revue d'économie contemporaine*, December, 8-17, 7-17.
- Allais, M. (1954). *Les fondements comptables de la Macroéconomie*. PUF.
- Allais, M. (1967). Some Analytical and Practical Aspects of the Theory of Capital and Growth. In E. Malinvaud, & M. Bacharach (Eds.), *Activity Analysis in the Theory of Growth and Planning* (pp. 64-107). London: Macmillan.
https://doi.org/10.1007/978-1-349-08461-6_3
- Artus, P. (1989). *Macroéconomie*. PUF.
- Bilbault, X. (1961). Entreprises et planification. *Économie et Humanisme*, numéro spécial sur la planification française.
- Bleton, P. (1966). *Le capitalisme français*. Paris: Les éditions ouvrières.
- Bloch-Lainé, F. (1959). *A la recherche d'une économie concertée*. Ed. de l'Épargne.
- Coutrot, J. (1937). *Les méthodes d'organisation rationnelle et ce qu'elles peuvent apporter à l'industrie française*. Paris.
- De Vroey, M., & Malgrange, P. (2005). *La théorie et la modélisation macroéconomiques d'hier à aujourd'hui*. Docweb 0518, Décembre, CEPREMAP.
- Delmas, G. (1898). *Projet de comptabilité pour les imprimeries*. Ve Congrès des Maîtres Imprimeurs de France, Limoges, Paris, Charles-Lavauzelle.
- Delmas, G. (1900). *La comptabilité en imprimerie*. Bordeaux: Delmas.
- Delmas, G. (1905). Les prix de revient à l'étranger. In *XIe Congrès des Maîtres Imprimeurs de France* (pp. 23-38). Rouen: Charles Lavauzelle.
- Diemer, A. (2007). Quel modèle économique et social pour l'Europe: Bilan et perspectives. In *Colloque international de l'AEILF, Bilan et perspectives d'un demi-siècle de construction de l'Union européenne dans le cadre de la mondialisation économique contemporaine*. Warsaw: AEILF.
- Dupont, P. (1952). *Le contrôle des banques et la Direction du Crédit en France*. Paris: Dunod.
- Fontaine, F. (1962). *L'homme qui change le monde. Réalités*.
- Fontvieille, L. (1977). Evolution et croissance de l'Etat français de 1815 à 1969. *Cahier de l'ismea, AF, 13*, 1702-1712.
- Fourastié, J., & Courtheoux, J. P. (1968). *La planification économique en France*. PUF.
- Fourquet, F. (1980). *Les comptes de la puissance, histoire de la comptabilité nationale et du Plan*. Paris: Encres.
- Friedman, M. (1968). Money: The Quantity Theory. IESS.
- Gournay, B. (1961). *Technocrates et politiques*. *Économie et Humanisme*, numéro spécial sur la planification française.
- Gruson, C. (1968). *Origine et espoir de la planification française*. Paris: Dunod.
- Hansen, A. (1967). *Introduction à la pensée keynésienne*. Paris: Dunod.
- Hicks, J. (1937). *Théorie Mathématique de la Valeur en Régime de Libre Concurrence*. Paris: Hermann.
- Hicks, J. (1967). *Critical Essays in Monetary Theory*. Oxford University Press.
- Hicks, J. (1973). *Une théorie de l'histoire économique*. Seuil.
- Keynes, J. M. (1936). *General Theory of Employment, Interest and Money*. New York:

- Macmillan Publishers.
- Klotz, G. (2010). Les comptabilités de Maurice Allais. In A. Diemer, J. Lallement, & B. Munier (Eds.), *Maurice Allais et la Science Economique* (pp. 409-442). Paris: Clément Juglar.
- Kuisel, R. (1984). *Le capitalisme et l'État en France. Modernisation et dirigisme au XX^e siècle. Traduction française*. Paris: Gallimard, NRF.
- Kydland, F. E., & Prescott, E. C. (1977). Rules Rather than Discretion: The Inconsistency of Optimal Plan. *The Journal of Political Economy*, 85, 473-492.
<https://doi.org/10.1086/260580>
- Lemarchand, Y., & Le Roy, F. (1999). La limitation de la concurrence par la définition d'une norme: L'introduction de la comptabilité analytique en France. In *Les Cahiers de l'Artemis, Les comportements concurrentiels comme objets d'étude* (pp. 115-129). Nantes: Presses de l'Université de Nantes.
- Lucas, R. E. (1972). Expectations and the Neutrality of Money. *Journal of Economic Theory*, 4, 103-124. [https://doi.org/10.1016/0022-0531\(72\)90142-1](https://doi.org/10.1016/0022-0531(72)90142-1)
- Malinvaud, E. (1950). *L'expérience travailliste et la pensée économique anglaise*. Nouvelle Revue de l'Economie Contemporaine, 7-8-9, Juillet, 18-22, Août-septembre, 7-16.
- Malinvaud, E. (1991). *Les voies de la recherche macroéconomique*. Paris: Odile Jacob.
- Malinvaud, E. (2010). Croissance économique et grands déséquilibres. In A. Diemer, J. Lallement, & B. Munier (Eds.), *Maurice Allais et la science économique* (pp. 137-150). Paris: Clément Juglar.
- Margairaz, M. (1991). *L'Etat, les finances et l'économie. Histoire d'une conversion 1932-1952*. Paris: Comité pour l'histoire économique et financière de la France.
<https://doi.org/10.4000/books.igpde.2320>
- Margairaz, M. (1992). *Histoire économique XVIII-XIX siècle*. Larousse.
- Monnet, J. (1976). *Mémoires*. Fayard.
- Rissoyre, P. (1961). *Orientation des investissements et politique d'incitation. Économie et Humanisme*. Numéro spécial sur la planification française.
- Sauvy, A. (1970). Histoire de la comptabilité nationale. *Economie et Statistique*, 14, 27-39.
<https://doi.org/10.3406/estat.1970.1964>
- Shonfield, A. (1967). *Le Capitalisme d'aujourd'hui*. Paris: Editions Gallimard.
- Terray, A. (2003). *Des francs-tireurs aux experts-L'organisation de la prévision économique au Ministère des Finances (1948-1968)*. La Documentation française.
- Tinbergen, J. (1953). Planification et liberté dans l'analyse économique générale et l'expérience des Pays Bas. *Revue économique*, 4, 245-261.
<https://doi.org/10.3406/reco.1953.406968>
- Tinbergen, J. (1961). *Techniques modernes de la politique économique*. Dunod.
- Vanoli, A. (2002). *Une histoire de la comptabilité nationale*. La Découverte.