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## **20TH CENTURY PUBLICATIONS ON COST ACCOUNTING BY SPANISH AUTHORS PREVIOUS TO THE STANDARDIZATION ACT (1900-1978)**

*Abstract:* This paper aims to describe and explain the beginning and evolution of cost accounting in Spain through the examination of accounting texts. In this evolution, three periods are distinguished: the late 19th century, the first half of the 20th century, and 1951-1978. In 1978, the official standardization of Spanish cost accounting occurred. Cost accounting first appeared in Spanish texts at the start of the 20th century. However, in 19th century accounting treatises can be found references to some aspects of cost accounting to which the paper refers. The traditional orientation of authors in the second period clearly reflects a monistic recording pattern, i.e., that cost accounting in combination with general accounting forms a homogeneous whole, with full-cost allocation on the basis of historical costs. The small differences found among these authors relate to a large extent to the fixed-costs allocation. This period corresponds to the introduction into Spain of the Central European school of accounting thought represented by Pedersen, Schmalenbach, Palle Hansen, and, above all, by Schneider. This influence intensified from 1951 onward. In the second half of the 20th century, German thought shared influence with American thought represented in the works of Kester, Horngren, Lang, Lawrence, Neuner, etc. The French Accounting Plan (General Chart of Accounts), published in 1957, also had an obvious influence on Spanish accounting scholars of this time. This influence is clearly shown in the Spanish standardization of cost accounting

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published in 1978 as part of the first *Plan General de Contabilidad* (General Accounting Plan) passed in 1973.

## INTRODUCTION

After fixing the aims of every piece of research, either historical or current affairs, the researcher has to begin by delimiting the period under consideration. In our case, the focus is on the development of academic cost accounting. It is not our purpose to analyze how cost accounting thought evolved by studying company cases [e.g., Musgrave, 1976; Amat 1991, 1992; Fleischman and Parker, 1992; Bhimani, 1993; Amat et al., 1994; Carmona 2006], but to study the academic evolution of the subject. That is why the methodology of the paper focuses on an examination of textbooks published in Spain.

Due to the scarcity of material on cost accounting authored by Spanish researchers prior to the 20th century, the starting point of this study is the beginning of that century. Some attention has been accorded to earlier authors as an introduction to the subject. The end point is 1978, the year in which official Spanish cost accounting standardization was promulgated. This standardization was not particularly relevant from a practical point of view for firms but was quite significant for academicians.

The primary source material for the paper came mainly from texts housed in the Spanish *Biblioteca Nacional* (National Library),<sup>1</sup> as well as those in the Schools of Commerce.<sup>2</sup> The *Departamento de Contabilidad y Gestión* (Accounting and Management Department) and the library of the *Facultad de Económicas y Empresariales* (Faculty of Economics and Business Administration), both at the University of Málaga, and the paper *Accounting Publications and Research in Spain: First Half*

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<sup>1</sup>The Biblioteca Nacional is Spain's main library and capstone of its library system. As the national library, it is the center responsible for the preservation, cataloguing, and dissemination of Spanish documental wealth. All the national bibliographical production can be found in the library and is available to the rest of the library system, researchers, and cultural or educational institutions. It was founded by Philip the Fifth in 1712 as "Biblioteca Pública de Palacio" (Royal Palace's Public Library) by royal appointment, and was succeeded by the current Depósito Legal (legal depository), founded in 1957, where printers and publishers were required to deposit a copy of every book or printed matter of any kind published in Spain. In 1836, the library ceased being royal property, becoming part of the Interior Ministry, under its current name, "Biblioteca Nacional."

<sup>2</sup>These were the only educational institutions in charge of accounting studies until that duty was entrusted to universities in the second half of the 20th century.

of the 20th Century [Carrasco et al., 2004, pp. 40-58] have also provided great support to the project.

Nineteenth century antecedents were found by means of a bibliographical search for every author's first work in which there was reference to accounting applied to specific activities, to special accounting, or to accounting used by factories and industries. This breadth was necessary because the term "cost accounting" had not yet been coined. Publication date was the criterion used to sort the authors' lists into the three identified time periods. On this basis, some authors are included in the section devoted to the 19th century if their contribution to cost accounting was contained in a work published in that century, even if its subsequent editions appeared in the 20th century. The cost accounting contributions of most 19th century authors lack particular relevance as anticipated. However, some contributions by these authors to financial accounting do have some substance, as shown in Carrasco et al. [2004, pp. 40-58].

Subsequently, the authors who straddle the two centuries but whose contributions to cost accounting appeared in works published in the 20th century are studied. It is here that the first references to "cost accounting" were introduced. Some of these authors had already published works on financial accounting in the previous century. Most of the earliest contributions to cost accounting lacked in scientific ambition and were limited to passages in textbooks used at Commerce Schools.

The traditional orientation of authors belonging to the first half of the 20th century follows a monistic recording pattern in which cost accounting is integrated into general accounting to form a homogeneous whole, with full-cost allocations made on the basis of historical cost. The differences found among authors pertain to a large extent to the allocation of fixed costs. The cost price determined the sale price once the desired rate of profit was added.

The first half of the 20th century corresponds to the introduction into Spain of the Central European school of accounting thought represented by Pedersen, Schmalenbach, Palle Hansen, and, above all, Schneider. Here, the cost accounting contributions take on a much greater relevance, influenced as they were to a great extent by the aforementioned school of thought. In this context, the publication and dissemination of the book *Industrielles Rechnungswesen: Grundlagen und Grundfragen* (Industrial Accounting: Fundamentals and Main Problems) by Erich Schneider, translated into Spanish in 1949 under the title *Contabilidad Industrial* (Industrial Accounting),

is one of the most important landmarks of the history and evolution of cost accounting in the country. The first version of this work was published in Copenhagen in 1939, but in German, under the title *Einführung in die Grundfragen des industriellen Rechnungswesens* (Introduction to the Main Problems of Industrial Accounting). Six years later, in 1945, the Danish edition was published, also in Copenhagen. It was a considerably improved edition, with the title *Industrielt regnskabsvæsen; en indledning til grundproblemerne* (Industrial Accounting: An Introduction to Fundamental Problems). This Danish version was the one first translated into Spanish. In 1954, once Schneider had returned to his chair at the University of Kiel, the work was republished in German under its definitive title. This new edition, reflecting substantial improvements over the Danish edition, was also translated into Spanish and published in 1960 under the complete title: *Contabilidad industrial: fundamentos y principales problemas* (Industrial Accounting: Fundamentals and Main Problems). The distribution of this work in Spain actually started at this point. A few years before, in 1952, the work by Hans Winding Pedersen, *Omkostninger og Prispolitik* (Costs and Price Policy), had been translated into Spanish and published in Madrid under the same title, *Los costes y la Política de precios*. The books by both authors, Pedersen and Schneider, changed significantly the nature of accounting in Spain.

From the 1950s onward, the first references to the German thought approaches appeared. Numerous citations from Pedersen and Schneider show that their theories permeated quickly into the Spanish academic milieu. Spanish authors, e.g., Goxens [1957], Fernandez Pirla [1957], Carrascoso [1965], Dominguez and Velasco [1969], and others, spread these ideas through their works aimed at both university teachers and students, as well as accounting professionals.

The dissemination of the German school of thought in general and that of Schneider in particular caused a radical new direction in Spanish cost accounting. Up to then, Spanish cost accounting theory was clearly unified. From that moment, two spheres, administrative and technical, began to be distinguished in the company. The two spheres gave rise to two corresponding areas, the external and the internal, with their respective accounting schemes, their own calculation methods, their specific accounting recording, and other novelties. Because of that, the dissemination of German accounting thought provoked in Spain, in our opinion, a real paradigm shift in accounting in general and in cost accounting in particular.

The accounting approach that underlies Schneider's work provides great theoretical magnitude. Its rational basis, of great practical usefulness, turns cost accounting, up to then considered a part of financial accounting, into an autonomous tool of substantive importance to enhance the effectiveness and rationality of management. In this way, a work that, according to its author, was only intended to be a textbook for students turned out to be an indispensable work for experts and for all who wanted to pursue cost accounting in depth.

Current cost accounting in Spain has taken shape from the 1950s forward under the influence of the Central European and American schools of thought. The spreading of Schneider's [1949], Pedersen's [1952] and Palle Hansen's [1957] works, together with the influence of American thought (e.g., the work of Kester, Horngren, Lang, Lawrence, Neuner, and others), the introduction of direct costing, and the publication of the French Accounting Plan (General Chart of Accounts) in 1957, had pronounced repercussions among Spanish accounting scholars of the second half of the 20th century. These influences are clearly reflected by the standardization of cost accounting, published in 1978 as group nine "*Contabilidad Analítica*" (Analytical Cost Accounting), a part of the first *Plan General de Contabilidad* (General Accounting Plan) passed in 1973.

The paper is organized into this introduction and three sections, one for each period studied (cost accounting antecedents in 19th century Spain; cost accounting as developed by Spanish authors of the first half of the 20th century; and the most significant contributions from 1951-1978). In each section, there will be a short general comment on the works and authors included. In the three appendices that follow, one for each period, there will appear a detailed study of the authors, works, and contents that feature the theoretical aspects of cost accounting we think characteristic and support our general conclusions. These appendices are presented in tabular form, with four columns – authors; works, and editions consulted; contents and general comments; and other comments and assessments of the works. In the second column, after the work's title, there appears a capital letter identifying the classification of its contents according to the following key: (A) general works with some section devoted to cost accounting, (B) works on accounting applied to specific activities, (C) works on general cost accounting, and (D) works on special facets of cost accounting.

Finally, it should be noted that our approach focuses neither on management or cost accounting practices nor on the

social context in which early developments on cost calculation emerged. Our aim has been to evaluate how the Spanish scholars thought about cost and management accounting's evolution. For this purpose, we have analyzed the works on this subject published from the end of the 19th century through the promulgation of the Spanish Standardization Act in 1978. Recent historical research has begun to study the emergence of early cost calculation practices in our country, its evolution and context. Interested readers can consult the interesting review by Carmona [2006, Vol. 2, pp. 905-923], in which the research carried out from the 1990s onwards by authors such Alvarez, Carmona, Carrasco, Donoso, Fernandez, Gutierrez, Gomez, Larrinaga, Prieto, Romero, and other scholars is reviewed.<sup>3</sup>

### COST ACCOUNTING TEXTBOOKS IN SPAIN: ORIGINS AND EVOLUTION

Though this research neither focuses on management or cost accounting practices nor on the social context, some analysis of our research findings on the evolution of Spanish scholars' thought on cost and management accounting is needed to strengthen its theoretical grounding and to make it more understandable.

First, since this paper aims to examine the development of academic cost accounting thought through the study of Spanish textbooks, it is necessary to analyze the connection between this evolution and the development of the degree structure to discover how the latter required the former. The chronological development of accounting studies in Spain<sup>4</sup> came in three phases<sup>5</sup>: foundation of the Schools of Commerce; introduction

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<sup>3</sup>A preliminary version of this work was published as a working paper No. WP05-30 by the Instituto de Empresa Business School, Madrid, November 18, 2005.

<sup>4</sup>A review on this subject can be found in Montesinos [1998] and Prado et al. [1991].

<sup>5</sup>Although beyond the boundaries of this study, the next important reform in university organization came in 1983 with the University Reform Act. It was necessary because of the transition to a democratic system after the dictatorship of General Franco. The new structure of university degrees introduced three degrees in Economics and Business:

- "Licenciado en Administración y Dirección de Empresas" (Degree in Business and Management).
- "Licenciado en Economía" (Degree in Economics)
- "Diplomado en Ciencias Empresariales" (a lower degree in Business and Management)

According to this academic plan, students had to take three compulsory subjects



of accounting as an academic subject in universities; and reform of economic studies.

*Foundations of the Schools of Commerce:* It has already been pointed out in the introduction that Commerce Schools were the only educational institutions responsible for accounting studies until such time as that charge was entrusted to the universities. At the turn of the 19th century, courses on “commerce” were being developed by organizations of merchants<sup>6</sup> (“Consulados,” “Juntas de Comercio”). In 1797, a royal decree entrusted “Consulados” to organize commerce studies.<sup>7</sup> Shortly thereafter, private commerce schools began to appear in Spain (Cádiz, 1803; Bilbao, 1804; Barcelona, 1805; Madrid, 1828). However, the French influence brought to Spain under Bonaparte rule a centralizing view of government that lingered after the Peninsular War. Thus, in 1836, the General Academic Plan was passed which included commerce studies in Spanish higher education and organized them officially in 1850 by royal decree.<sup>8</sup> Finally, in 1857, Schools of Commerce were founded as governmental centers for commercial studies, again by royal proclamation.<sup>9</sup>

Commercial studies were organized at three levels<sup>10</sup>: “Peritaje Mercantil” (elementary), “Profesorado Mercantil” (intermediate), and “Intendente Mercantil” (advanced). In the first, there were three accounting subjects: “Elementos de Contabili-

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on accounting in their first “cycle”: “General Accounting” (first year), “Finan-  
cial Accounting” (second year), and “Cost Accounting” (third year, constituting  
13.33% of total degree compulsory credits). In addition, two compulsory subjects  
in the second cycle were “Consolidation and Accounting Analysis” and “Audit-  
ing” (constituting 20% of total degree compulsory credits). Furthermore, students  
could study different optional subjects: “Public Accounting,” “Fiscal Accounting,”  
“International Accounting,” etc. according to the requirements of each faculty.

Finally, in 1990, the current University Law was passed with the new struc-  
ture of degrees to achieve European convergence of higher education. However,  
since 1978 is the fixed boundary of the paper, its impact has not been analyzed.

<sup>6</sup>Even before, at the beginning of the 17th century, different private institu-  
tions offered studies in “Commerce,” e.g., in Bilbao, Saint Andrew’s College was  
founded in 1604 and St. Nicholas’ College in 1610, both teaching commerce.

<sup>7</sup>However, the first private commerce school was founded by the Real  
Sociedad Aragonesa de Amigos del País in 1784 (authorized by the Spanish King,  
Charles III),

<sup>8</sup>A review on this matter can be found in Fernández Aguado [1997].

<sup>9</sup>Queen Isabel II by royal decree founded National Schools of Commerce  
(September 8, 1850). This Act created the Madrid School of Commerce and pro-  
vided for the foundation of Schools of Commerce in Barcelona, Bilbao, Cádiz, La  
Coruña, Málaga, Santander, Sevilla, and Valencia.

<sup>10</sup>In prior Schools of Commerce, there were only two levels – “perito mercan-  
til” (elementary) and “profesor mercantil” (advanced).



dad,” “Teneduría de Libros” (Bookkeeping), and “Contabilidad General,” all related to financial accounting. In the second, there were also three courses – “Contabilidad Aplicada” (financial accounting), “Contabilidad Aplicada” (devoted to accounting issues applied to specific activities including cost accounting issues), and “Organización y Revisión de Contabilidades, Integración y Análisis de Balances y Contabilidad Pública” (a mix of audit, consolidation, analysis, and public accounting). In the third, there were no accounting courses.

The teaching methodology was very practical. Professors in these schools were engaged in very few academic research activities other than the publication of “handbooks” to advance general or particular knowledge among students or professionals. Professors devoted their efforts to professional practice in order to augment their poor wages.

*Introduction of Accounting as an Academic Subject in Universities:* Hitherto, accounting studies were situated only in the Schools of Commerce. In 1943, the government created the first Facultad de Ciencias Políticas y Económicas (Faculty of Political and Economic Sciences) in Madrid. Though it was an opportunity to entrust accounting teaching to universities, the early curricula of these faculties<sup>11</sup> did not include accounting subjects at all. Responsibility for accounting instruction remained with the Commerce Schools.

In 1953, the earlier Faculties of Political and Economic Sciences were recast as Faculties of Political, Economic, and Commercial Sciences, bringing about a fundamental milestone as the advanced courses of Schools of Commerce were absorbed into the universities. Since the best professors and professional practitioners moved from the former to the latter, accounting became a more important and larger component of the accounting student’s curriculum. A causal link was established between this emergence of higher studies in accounting, economics, business, and administration and the post-1950 publishing boom of academic books in general and cost accounting books specifically.

*Reform of Economics Studies:* In the 1970s, another decisive landmark occurred when the degrees and curricula of the faculties were again modified. They became the “Facultades de Ciencias Económicas y Empresariales” (Faculties of Economics

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<sup>11</sup> In 1953, the faculties of Barcelona and Bilbao were founded.

and Business Sciences), offering two independent branches of study – Economics and Business. Furthermore, in 1971, by virtue of the 1970 General Education Act, the Schools of Commerce became “Escuelas Universitarias de Empresariales” (University Business Schools) and were integrated into the Spanish Universities. The 1973 Spanish academic plan for these faculties included a) one subject on general accounting and one on business in the economic branch, and b) a wide range of subjects on accounting, business, and management (financial accounting, cost accounting, etc.)

In this period, especially following the dictatorship, Spain underwent critical changes in its economical and social context. Francoism promoted isolation from the rest of Europe. From the mid-1970s, Spain had to face social and economic changes precipitated by the oil crises and its integration into the European Community. Spain went through a very important economic development, encouraging the opening of its economy and creating the conditions to professionalize and internationalize its enterprises, institutions, and organizations.

In these years, Spanish accounting research [Montesinos, 1998, pp. 357-380] took two main paths – a descriptive literature on the Spanish Chart of Accounts (1973) and a formal mathematical approach initiated by authors like Mattessich, Devine, Ijiri, Moonitz, and others. Notwithstanding, there was still only a small volume of academic research due to the scarcity of financial support for research and the small number of universities in the country. However, scholarly endeavor began to increase due to the contributions by academics such as Cañibano, Calafell, Bueno, Montesinos, and García.

As one can gather from prior paragraphs, the publication of books on cost accounting is related to the development of accounting studies in Spain. There was certainly an increase in the number of general accounting textbooks, but what was the significance of that increase as far as the evolution of cost accounting is concerned? That is, did the increase in the number of books reflect a parallel increase in the importance of cost accounting or did it just signal a general increase in the number of accounting textbooks?

There is, in fact, a great increment in the number of books on accounting published from the early 1950s. About one hundred were published in the first half of the century, while in the second half through 1978, approximately one thousand were published. Nevertheless, this ten-fold increase is not paralleled in the cost accounting area where the growth was more

moderate, from approximately 30 to about 50 for the later period.

To get a proper understanding of how cost accounting evolved in Spain, apart from approaching this matter as purely academic by counting the number of texts, it is necessary to analyze the development of cost techniques in professional practice. According to Amat et al. [1994, pp. 107-122], the introduction of cost accounting in Spain experienced significant delay, with only multinational companies disseminating new practices. The question needs be asked, what was the use of these cost accounting syllabi and textbooks if the sole driver of the publications was to satisfy the requirements of public administration agencies? From the end of Spanish Civil War (1936-1939) until the death of General Franco in 1975, Spanish social context was influenced by strong political dictatorship, with an economy stoutly controlled and sheltered. Before this period, Spanish neutrality in World War I, the lack of a bourgeois revolution, and the crisis at the end of the 19th century drove Spain into an isolationist economy. With the late arrival of her industrial revolution, it was necessary for multinationals to develop not only the basic industries, such as iron, steel, mining, and railroading, but the financial system as well. As will be seen in the appendices, these practices, brought initially by multinationals established in Spain, were widely disseminated by textbook authors.

A finding of the paper is that there were a significant number of engineers writing textbooks on cost accounting. This development should not be surprising given the early history of scientific management in the U.S. The reason is not an academic one because cost accounting was not included in engineering studies, rather it was a practical one. The staff in charge of firm cost accounting was engineers, not accountants. According to Armstrong [1987, pp. 415-436], German management hierarchies, until recently, have been dominated up to the highest level by professional engineers; it is virtually unknown for a German managing director to be an accountant. Spain industrial hierarchies, more in the German tradition than in the Anglo-Saxon, were basically composed of engineers [Fernández Peña, 1981, pp. 353-372; Carmona, 2006, Vol. 2, pp. 905-923]. Consequently, a significant number of textbooks were written by engineers.

#### FORERUNNERS OF COST ACCOUNTING IN 19TH CENTURY SPAIN

The first references to cost accounting in this period are to

be found in works on general bookkeeping. The more financial accounting evolved, the more cost studies gained in notoriety as the accounting specifically applicable to manufacturing. In this sense, it gained some recognition as an autonomous discipline utilized in special or sector accounting environments, such as banking, agricultural, mining, and the building trades. Although the tendency was to unified or monistic accounting and there was little thought about cost allocation, some works proposed the use of the term "*fabricacion*" (manufacturing) as the account in which costs were collected. The collection account bore a variety of names depending on the type of industry.

The contributions of the authors of this period to cost accounting are not particularly relevant. Some limited themselves to simple references to certain problems of cost finding. By contrast, the contributions of most of the studied authors to bookkeeping served to clarify and systematize accounting approaches in Spain.<sup>12</sup> In Appendix I, a brief analysis appears regarding the contributions of the most important authors of the period.

#### COST ACCOUNTING ADVANCES BY SPANISH AUTHORS, 1900-1950

This section is devoted to the first fifty years of the 20th century because from this date onward begins the introduction and spread of the German school of accounting thought represented by authors Pedersen, Schmalenbach, Palle Hansen and, particularly, Schneider.

The doctrinal orientation of the authors of the first half of the 20th century was conditioned by the prior objective of industrial accounting at the beginning of the century of finding cost and sale prices, the latter derived by adding costs to the desired profit margin. The finding of product cost was made following a monistic approach by means of a "*fabricacion*" (manufacturing) account and a cost allocation based on full costing and inorganic historical costs. A process-costing method was deployed without considering separate production centers corresponding to a uniform or homogeneous output and to relatively continuous production.

The main problem in the derivation of production cost lay in the assignation of indirect costs. They have to be added to

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<sup>12</sup>This remark represents the case in general, but there are exceptions as some works are limited to explanations of the rudimentary foundations of accounting by describing elementary notions developed in booklets of no more than 20 pages.

product cost by means of rates established subjectively, generally in proportion to the amount of the factors of production (raw materials, manpower, or both) inputted. The main differences among the several contributions analyzed lie in the allocation of fixed costs. Once the cost price is found through the addition of its different components, the sale price is obtained by adding the profit rate.

A common practice was to explain the fundamental elements of the discipline by describing concrete case studies, such as cost accounting in electrical companies, flour milling, mining industries, etc. The accounts to use in these cases were adapted to the nature of the respective industries.

Teachers of the former Schools of Commerce, such as Boter [1923a, 1923b], De la Helguera [1902], Gardo [1902], Munoz Arbeloa [1902], Rogina [1902], Castro y Suarez [1908], Sacristan y Zabala [1918], Ruiz Soler [1924], Rodriguez Pita [1932], and Vicens [1943a, b, c], spread the theoretical and practical foundations of industrial accounting, as the discipline was called in Spain during the first half of the 20th century, through textbooks addressed to students in different university courses.

Others like Corona [1915], Martinez Perez [1920], Fernandez Casas [1926], and Bruno [1931], who acted as inspectors of the Bank of Spain or held important positions in public or private firms, also became significant propagators of industrial accounting, spreading their ideas through their incorporation into the syllabi of the entrance examinations for the Bank of Spain or state agencies.

Among the most relevant contributions was the one by Rogina [1902] who introduced the first proposal of cost finding by production processes. This procedure consisted of finding the cost contribution of individual manufacturing phases. For each phase, intermediate accounts were opened. Also worthy of mention is the proposal made by Martinez Perez [1920] to use a "*labores*" (labors) account for every product and production center, a prototype of job-order costing. In this way, it would be possible to accumulate the costs of the goods finished and delivered to the warehouse by means of job orders. This constituted a clear precedent of a mixed operational model in Spain, e.g., by job orders and activities (production centers).

Another of the most important authors is Boter, who in his work *Precio de coste industrial* (industrial cost price), explains two procedures to calculate the industrial cost price that he considers complementary – one *a priori*, to assign a cost price to the

products before being sold without waiting until the end of the accounting year, and the other *a posteriori*, to compare results with the figures obtained through the *a priori* method. Moreover, he adds a second objective to the cost accounting: "Find out the year's results and the financial position of the firm" [Boter, 1935, pp. 10-11]. As other authors of this period, he introduces and proposes an organic scheme for the formation of the cost price. This causes a deep change in the analysis criterion since it goes from the consideration of single cost elements to organic aggregates by centers, identifying the costs driven by all cost elements in the diverse functions of individual departments.

Finally, it is at the end of this period when the expression "cost accounting" was introduced into the parlance. It is also the occasion when the discipline begins to be recognized as an autonomous science as it is today, even though there was some reluctance from some scholars as one can deduce from the words of Vicens [1943a, p. 7]. In effect, as he says in the preface of his work *Contabilidad industrial* (industrial accounting), "We are in no way claiming to have brought to the readers a compilation of what abroad is already considered an important branch of the technical-industrial science, the so called 'Contabilidad de Costo' [Cost Accounting]." In Appendix II, there is a short analysis of the contributions of the main authors of this period.

### MOST SIGNIFICANT CONTRIBUTIONS FROM 1951-1978

Practically at the same time that the Spanish translation of Schneider's [1949] work *Contabilidad industrial* (Industrial accounting) appeared in 1952, *Los costes y la Política de precios* (costs and price policy) by Pedersen was published. As a consequence of both works, the cost accounting methodology in the country changed significantly. It will be recalled that in the first half of the 20th century, the typical approach was based on a specific calculation of costs within a model of full-cost allocation.

The suitability of these approaches for business management was placed in doubt for several reasons. First, there was the question of whether individual products were actually allocated a proportional amount of indirect cost. Second, the allocation of the indirect costs was based upon highly subjective elements. Third, it was generally felt that the full-cost accounting approach was not able to provide the basis for an accurate analysis of product profitability. The method of homogeneous centers and job costing are the key elements of the system

proposed by Schneider. It arose in the hopes that the above deficiencies could be overcome, allocating to every product the appropriate proportion of the costs incurred in the different production departments involved in its transformation process. The departments became responsibility centers for the effective economic control of the company by management.

On the other hand, during the 1950s, the direct costing model for assigning costs was introduced into Spain. There is no unanimous opinion among researchers as to the origins of direct costing. Some think it originated in the U.S. during the 1930s [Harris, 1936]; others trace its origins to Schmalenbach; still others date the innovation from the 1940s U.S. as reported in *Research Report No. 23 –Direct Costing*, issued by the National Association of Cost Accountants in 1953.

Whatever its origin, the earliest references to direct costing in Spain are first found in the 1960s based on the three following premises:

- Only variable expenses can be assigned to product, not the fixed costs.
- The difference between the sale price and the variable expenses determines the gross contribution of every product to the firm results.
- The fixed expenses are linked to time periods and should be so charged.

Criticisms of direct costing were immediately heard. They focused on the inadequacy of direct cost to determine the sale price, as well as on the exclusion of all general expenses for inventory valuation. This dissent provided grounds to revisit the advantages of the full-costing models.

Another important milestone of this period was the consolidation of predetermined cost systems and, in particular, standard costing. It was considered that they contributed to better management. These systems presented significant possibilities for future costing and precipitated an evolution that led accounting to more effective cost/profit analysis and operating control.

Finally, the influence of American thought, embodied in the works of authors, such as Kester, Horgren, Lang, Lawrence, Neuner, etc., began to make itself felt in the second half of the 20th century. Together with the publication of the French Accounting Plan, these theories had a great impact among accounting experts in this half of the century.

The first official French Accounting Plan (Plan Comptable Général), published in 1957 although its origins predated its



publication according to Standish<sup>13</sup> [1990, pp. 337-351], adopted a dualistic view in proposing a totally separate functioning of cost accounting and general accounting. The influence exerted by the French general chart of accounts on the shaping of Spanish financial accounting is evident in the structure of the Spanish General Accounting Plans of 1973 and 1990, which are clearly inspired by the French plans of 1957 and 1982 respectively. With regard to the standardization of cost accounting, the influence of France is likewise obvious although the weight of German methodological approaches is also perceptible.

Besides the above facts, the proposal for a comprehensive chart of accounts of Professor Calafell, formulated in 1958 [Dodero, 1975, pp. 113-115] and published in 1963 [Calafell, 1963, pp. 125-135], is worthy of mention. The plan is explained in detail by Requena [1973, pp. 125-135]. Its economic reasoning and approaches are clearly inspired by Central European thought as can be seen in groups five “clases de costes” (kinds of costs), six “lugares de costes” (cost places), and seven “portadores de costes” (cost bearers). His planning proposal of the economic-technical cycle of the firm constitutes a precedent for his text,<sup>14</sup> published in 1978, contained in group nine, “contabilidad analítica” (analytical cost accounting), within the Spanish first *Plan General de Contabilidad*, passed in 1973.<sup>15</sup> This text marks the end of the period under study in the paper. In Appendix III, there appears a brief analysis of the contributions of the main authors of this period.

## CONCLUSIONS

The following bullet points are the main conclusions the

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<sup>13</sup>Its origins occurred during World War II when the Vichy Government, under powerful German pressures, appointed a commission to develop and implement a national chart of accounts, with the intention to make it compulsory for all enterprises and industrial sectors. French authors and accounting scholars do not agree about the circumstances in which this plan was adopted. On the one hand, some think that its origins are to be found in the *Plan Comptable Général* (French Accounting Plan), adopted in 1942, which is closely similar to the Göering Plan [Detoeuf, 1941, p. 9; Chezlepretre, 1943, p. 14; Fourastie, 1943, p. 14, quoted by Standish, 1990, pp. 337-351]. On the other hand, other authors had increasingly come to the idea that the *Plan Comptable* was the result of a process of indigenous development of pre-war views. They defend this idea on the basis of a proposal entitled *Methode uniforme de calcul des prix de revient*, published in 1937 by the Commission Generale d'Organization Scientifique (CEGOS).

<sup>14</sup>Ministerial Order of August 1, 1978

<sup>15</sup>Decree 530/1973 of February 22, 1973

authors have drawn from the evolution of Spanish cost accounting in the three periods identified.

- Cost accounting is introduced in Spanish academic literature at the end of the 19th century. This introduction took place in two ways – fundamentally by means of sectorial studies (farming, mining, banking, etc.) but also as a consequence of firm practices.
- During the late 19th century and the early 20th century, cost accounting was not an independent discipline. It was integrated into general accounting.
- Most Spanish texts on cost accounting in this period lacked scientific ambition and are not true contributions. They simply consist of explanations for teaching purposes.
- The spread from the 1950s of the works by Central European authors, such as Schneider, Palle Hansen, and Schmalenbach changed substantially the accounting approaches in Spain. Cost accounting became independent from general accounting. Up to then, there had been a clear monistic approach.
- From this time and especially from the 1960s, the U.S. influence began to gain importance, as well as direct costing.
- With the publication of the French Standardization Plan of 1957, the French pattern of homogeneous sections achieved a great prominence. They are taken together with Schneider's contributions in formulation of group nine on analytical accounting in the Spanish Standardization Plan published in 1978.

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# APPENDIX I AUTHORS OF THE 19TH CENTURY

(A) general works with some section devoted to cost accounting; (B) works on accounting applied to specific activities;  
 (C) works on general cost accounting; (D) works on special facets of cost accounting

Authors	Works	Contents	Other comments
Felipe Salvador y Aznar member of the Real Academia de la Historia (Royal Academy of History); Commander of the Order of Charles III; professor of the Arts and Science Association	<i>Manual de Teneduría de libros por partida doble</i> (Handbook of Double-Entry Bookkeeping) (A) 1st edn. 1846 19 editions, last one in 1910	It is a theoretical-practical work. It analyzes the accounting of banks, aristocracy, great landowners, and companies. Lesson XXVIII is devoted to the accounting of factories, as well as farmers in general and sugar farms specifically. A factory or a mine needs the following accounts to keep their accounting: Primeras Materias, Jornales operarios, capataces y maestros, Gastos de fabricación, y Almacén de generos fabricados (raw materials, wages to workers, foremen and masters, operating expenses, and warehouse (p. 86).	main contribution: first author to mention applied accounting with regard to specific activities, i.e., manufacturing accounting; consequently, first reference to cost accounting
Emilio Oliver y Castañer (ed.)	<i>El Consultor del Tenedor de libros</i> (The Bookkeeper consultant) (A) 1st edn. 1883	Joint work gathering monographic papers by several authors, published in fascicle form. Their interest bases on their practical nature.	According to Antonio Goxens, for many years, this work was most consulted by industrial bookkeepers in Barcelona.
Manuel Fernández Font professor of bookkeeping; Bachelor of Commerce with an important professional career as accountant in several credit companies and railways in Switzerland and France	<i>Contabilidad industrial y Agrícola Simplificada</i> (Simplified industrial and farming accounting) (B) 1st edn. 1890	It is a textbook devoted to practical teaching of accounting that does not make any contribution to cost accounting. Through a monistic approach, it proposes the use of a manufacturing account with different names according to the industrial activity exercised. This account accumulates the costs of the different processes. The author does not enter into any considerations of cost allocations.	
Román Oriol professor and mining engineer	<i>Contabilidad minera: Lecciones explicadas en la Escuela de ingenieros de Minas</i> (Mining accounting: lessons explained at the School of Mining Engineers) (B) 1st edn. 1894	In the first part of his book, the author distinguishes between accounting and industrial accounting. He ascribes more importance to the latter, identifying the former with bookkeeping. On the contrary, he curiously identifies the later with accounting organization. We think that he is the first author who attributes a real importance to industrial accounting, considering that it is in some way independent of bookkeeping. In the second part of the book, he exposes an analysis of mining accounting. He begins with a classification of expenses, distinguishing between fixed and variable. He goes on by indicating the expenses that form product cost. He considers statistics as an indispensable complementary device and defines it as "statements in which are recorded all relevant data to compare one moment and the other." In this sense, very diverse statements may result according to the type of industry.	The author considers that studying accounting is an indispensable complement to achieve a true specialization as a mining engineer.

**APPENDIX II**  
**AUTHORS OF THE FIRST HALF OF THE 20th CENTURY**  
 (A) general works with some section devoted to cost accounting; (B) works on accounting applied to specific activities;  
 (C) works on general cost accounting; (D) works on special facets of cost accounting

Authors	Works	Contents	Other comments
Alvaro de la <b>Helguera</b> Bachelor of Commerce; professor, accountant of the Official Central Institute of Graduates in Commerce of Spain; vice president of the Official Institute of Graduates in Commerce of Bilbao; chief accountant of Hulleras Puertollano, S.A.	<i>Contabilidad Industrial</i> (Industrial Accounting) (B) 1918	It is a textbook of a theoretical-practical nature devoted to Antonio Sacristan y Zabala. Its contents are much more specific than the ones of the previous book that he wrote on accounting [1902]. It exposes in detail and with many practical examples the accounting of an electricity company, a case that is also applicable with little change to other industries. The accounting is developed by means of general explanatory statements. Industrial accounting is defined as the science that provides us with the basic rules to describe the economic and administrative facts constituting the wealth of a factory or workshop. Cost calculation is considered an appendix to general accounting and functions through the "Operating" or "Manufacturing" account which goes by different names depending on the kind of industry.	Its contribution to cost accounting is minimal.
Jose <b>Rogina</b> professor of the School of Commerce of La Coruña; former chief accountant of the Bank of Spain branch	<i>Tratado de Contabilidad general o Teneduría de libros</i> (Treatise on General Accounting or Bookkeeping) (A) 1st edn. 1902	This is a textbook of a general nature that contains a section devoted to the special accountings of bankers, factories, owners, big commercial companies, state, province, and town councils. In the section devoted to factories accounting, the author proposes, in line with a monistic approach, the use of a "Manufacturing" account, in which the amount of the inputs is charged and the receipts obtained from the sale of manufactured products is credited. The cost building accounts that the author considers are: machinery, raw materials, manpower, overhead costs, and manufactured products or manufacturing. After enunciating the accounts, he explains in detail the functioning of every one. He proposes a procedure that he describes as novel. It is a procedure staggered into manufacturing stages. For each stage, interim accounts are opened. At the first production stage, the raw material cost, the wages, and the corresponding rate of manufacturing and overhead costs are charged to the interim account. The latter is credited with the value of the product obtained at the stage. At the following stage, the respective interim account is charged with this value. This will be increased by the costs of this stage and so forth to obtain the finished product. If some of the general expenses could not be broken down, they would be charged at the last stage.	The relevance of Rogina's proposal stems from the fact that it is the first proposal formulated for an alternative procedure in manufacturing stages or processes, which are complemented by the implementation of the corresponding auxiliary books.
Mariano <b>Castro y Suárez</b> professor of Industrial Technology at the Jovellanos School of Commerce of Gijón	<i>Contabilidad de Empresas Industriales</i> (Accounting for Industrial Companies) (B) 1st edn. 1908 2 vols.	Textbook of a theoretical-practical nature. It describes the production process in different industries: farms, mills, bakeries, pasta and starch factories, sugar refineries, chocolate manufacturers, wine producers, brewers, alcohol producers, oil mills, soap factories, candles producers, tanneries, textile manufacturers, paper manufacturers, cork and stopper factories, printers, and electric companies. The author analyzes the production operations of all these entities as the basis for his accounting approach of a monistic nature. He emphasizes the importance of breaking down the manufacturing account into consecutive stages if it is possible to specify the product in process in every stage.	The work shows that the author was familiar with different industries.

Authors	Works	Contents	Other comments
Eloy <b>Martínez Pérez</b> Bachelor of Commerce; branch chief accountant of the Bank of Spain	<i>Contabilidad elemental y superior</i> (Elementary and advanced Accounting) (B) 1st edn. 1920 published in three further editions	It is a textbook in a theoretical-practical line. It gathers the author's final contribution, since he refines and completes his thoughts and the explanations of his previous work [1910]. He exposes the different kinds of accounting with regard to the object or activity dealt with. The book tackles the building of price cost in all types of firms. The author's main contribution to cost accounting is his treatment of factories accounting. He defines the price cost of manufactured products as the total sum of raw materials and the manufacturing expenses of the different workshops, as well as the overhead expenses. To find this cost, he proposes the use of a "Labours" account as the cost building account, which gathers the overall cost by means of job-order cost sheets with regard to every good produced and delivered to the warehouse. It constitutes a clear precedent in Spain of the proposal of a mixed method by operations, job orders and processes (workshops or departments). The problem of general expenses is solved by charges that the central administration of the company makes to every production center or department in order to calculate overhead costs on a pro-rata basis. In the event that there were not a more equitable basis, the author proposes the amount of paid wages. On the other hand, the author advises to decentralize the accounting by departments or factories, as well as to establish a statement of the labor input in order to calculate the value of the products in process. It deals with the concepts and conditions of farming and ranching operations. The author's method of farming accounting follows, according to explicit mention by the author, the one used by T. Convert in his work <i>Comptabilité agricole</i> [1904]. The book explains the application of a double-entry bookkeeping to farming operations.	This is one of the most important authors of the beginning of the 20th century. His work is important because of its information and the clarifying nature of the practices in different kinds of industries. His expositions always join practical with theoretical developments.
Carlos <b>Corona</b> engineer and agricultural technician	<i>Administración y contabilidad agrícolas</i> (Agricultural administration and accounting) (B) published in 1915	It is a textbook in the theoretical-practical line devoted to the students of the Commercial Schools. The author considers accounting as a branch of applied mathematics. He includes cost accounting within what he calls special subjects and considers it indispensable for the training of the accountant. If he does not know this subject, he will not deserve to be called accountant because he is a simple "bookkeeper." The main aim of cost accounting is the building of the product cost price. It is formed by the cost of raw materials and remaining expenses. He proposes a proportional principle for its finding. Following a monistic approach, he considers the use of the "manufacturing" account to be charged with the amount of the inputs and credited with the obtained product. However, he defines the industrial firm as a mixed entity and, consequently, it seems that he considers the two fields, the internal and the external.	The author's contribution is mainly informative and instructive. It includes general references on the configuration and calculation of costs of farming products.
Antonio <b>Sacristán y Zavala</b> accounting professor at the School of Commerce; president of the Commercial and Industrial Society; inspector-manager of the Sociedad Editorial de España (Publishers Society of Spain)	<i>Teorías de contabilidad general y de administración privada</i> (Theories of General Accounting and Business Administration) (A) 1st edn. 1918 3rd and final edition 1932	It is a textbook in the theoretical-practical line devoted to the students of the Commercial Schools. The author considers accounting as a branch of applied mathematics. He includes cost accounting within what he calls special subjects and considers it indispensable for the training of the accountant. If he does not know this subject, he will not deserve to be called accountant because he is a simple "bookkeeper." The main aim of cost accounting is the building of the product cost price. It is formed by the cost of raw materials and remaining expenses. He proposes a proportional principle for its finding. Following a monistic approach, he considers the use of the "manufacturing" account to be charged with the amount of the inputs and credited with the obtained product. However, he defines the industrial firm as a mixed entity and, consequently, it seems that he considers the two fields, the internal and the external.	This book was important because of its wide dissemination due to the fact that it was devoted to the students of the Schools of Commerce. For this reason, it was widely read and quoted.

Authors	Works	Contents	Other comments
<p><b>Luis Ruiz Soler</b> professor of the School of Commerce of San Sebastian</p>	<p><i>Elementos de Administración y Contabilidad de Empresas</i> (Elements of Administration and Accounting for Companies ) (B) It is the second work of this author. 1st edn. 1924 5th and final edition 1945</p>	<p>The book was declared a commendable piece of work by the Real Academia de Ciencias Exactas, Físicas y Naturales (Royal Academy of Exact Sciences) and by the Real Consejo de Instrucción Pública (Royal Council for Public Education). It constitutes a complement to his previous work <i>Tratado elemental teórico-práctico de contabilidad general</i> (Theoretical-practical elementary treatise of general accounting), published in 1917, although in the line of applied accounting. He was the first to state the difference between applied accounting with regard to the subject, that is, to the legal status of the owner, and applied accounting with regard to the object, that is, to the kind of economic activity involved. He also makes the distinction between the two fields that are present in companies: the industrial or technical that embraces the internal facts or activities (productive process) and the commercial that embraces the external operations (goods purchases, sale of products, discounts, and cashing). He classifies companies in three classes: industrial, agricultural, and transportation. With regard to the industrial companies, he distinguishes two defining features according to the nature of their production: 1. The continuity of the production process: continuous and discontinuous or by consecutive stages. 2. The number and kind of products: homogeneous products and numerous and diversified products. On the other hand, he distinguishes between general manufacturing expenses (expenses to allocate directly to products, e.g., specific fixed costs and expenses of general allocation) and general administration expenses. The part devoted to industrial accounting is minimal. He proposes to separate the commercial accounting records from the industrial ones, while maintaining both within the same accounting. He attributes as an objective of commercial accounting the establishment of profit or loss. On the contrary, the industrial accounting aims to find out the industrial cost price. As to the industrial accounting, he proposes the “manufacturing” account to collect the transformation of the production elements into products. This account is charged with raw materials, manpower, and manufacturing general expenses and credited with the estimated sales price. The balance will gather the calculation errors, which will be posted on the profit-and-loss account.</p>	<p>This author's contribution is of great significance for cost accounting. He deals very skillfully with such subjects as the distinction between subjective and objective accounting, internal and external accounting, the classification of fixed costs, calculation methods for joint production, etc.</p>
<p><b>Fernando Boter Mauri</b> professor at the Schools of Commerce of Santander and Valladolid Bachelor of Commerce and Doctor of Law</p>	<p><i>Curso de Contabilidad</i> (Accounting course) (A) 1st edn. 1923a With the 5th edn., published in 1941, the title changed to <i>Tratado de Contabilidad general</i> (Treatise on General accounting). 20th and final edn. in 1988 with Jorge Serra Murtra as co-author</p>	<p>He proposes to make forecasts and assumptions on the amount of the year's production expenses and on the volume of production. The author proposes as the objective of industrial accounting the comparison at the end of the accounting year between the price costs assigned <i>a priori</i> with the actual ones that become reality.</p>	<p>The author is one of the great authors of the 20th century with numerous publications during a wide period of almost 70 years. His influence can be clearly felt in all accounting research in Spain, particularly in cost accounting, from the first quarter of the 20th century. He was a pioneer in Spain to use predeterminations in the calculation of the cost price and pricing.</p>
<p><b>Fernando Boter Mauri</b> (continuation)</p>	<p><i>Nociones fundamentales de contabilidad</i> (Elementary notions of accounting) (A) 1st edn. 1923b</p>	<p>This book is a summary of the main chapters of the previous work <i>Tratado de Contabilidad General</i>. It proposes to make forecasts and assumptions on the amount of the year's production expenses and on the volume of production. The author proposes as the objective of industrial accounting the comparison at the end of the accounting year between the price costs assigned <i>a priori</i> with the actual ones that become reality.</p>	<p>The author is one of the great authors of the 20th century with numerous publications during a wide period of almost 70 years. His influence can be clearly felt in all accounting research in Spain, particularly in cost accounting, from the first quarter of the 20th century. He was a pioneer in Spain to use predeterminations in the calculation of the cost price and pricing.</p>

Authors	Works	Contents	Other comments
<p><b>Jose Gardó Sanjuán</b></p> <p>Master of Science in Commerce; sworn Chartered Auditor member of the Real Academia de Ciencias Económicas y Financieras (Royal Academy of Economic and Financial Sciences)</p>	<p><i>Manual práctico de Contabilidad Industrial</i> (Practical handbook of Industrial Accounting) (C) 1st edn. 1925</p>	<p>It explains the rudiments of this discipline. The author does not consider industrial accounting as a discipline different from general accounting, but as a part of it, an auxiliary accounting, a tool to find costs and establish a reduction in prices. To allocate indirect costs, he proposes a "predictive allocation," that is, to estimate a fixed manufacturing cost amount for every produced unit and to correct it in each period. He considers internal statistics as an indispensable auxiliary accounting and develops at length the features and models of this recording. He presents a proposal of accounting recording and displaying in line with a monistic approach. For this purpose, he proposes the use of a building account entitled "Fabrication, Exploitation, Production o Industria," that is, Manufacturing, Exploitation, Production, or Industry. It is charged with the inputs and a balancing entry on the respective expenses accounts and credited with the industrial cost of the goods produced and the corresponding entry on the products account.</p> <p>It constitutes an enlargement of the first book. In it, the author considers industrial accounting a form of general accounting, even though with different objectives. The author completes the explanations of the cost building in an inorganic system advanced in his previous work:</p> <ul style="list-style-type: none"> <li>• "Precio de coste de fabricación," that is, production cost price or direct cost.</li> <li>• "Precio de coste industrial," that is, industrial cost price (the previous one plus the industrial general expenses).</li> <li>• "Precio de coste comercial," that is, commercial cost price (the previous one plus the sales expenses and the general expenses of the company).</li> <li>• "Precio de venta," that is, sale price (the price at which the products are sold).</li> </ul> <p>For the allocation of manufacturing expenses, he proposes the use of proportional rates applied to the costs by labor units, or labor value, to a general percentage or to a percentage by sections, carrying out a detailed calculation for each worker.</p>	<p>He is one of the main and most prolific Spanish writers on cost accounting. He ascribes to industrial accounting the main objective of finding the cost prices and the secondary objective of ascertaining the results and the financial situation of the company.</p>
<p><b>Juan Fernández Casas</b></p> <p>Bachelor of Commerce at the service of the Exchequer at the General Direction of Banking and Stock Exchange</p>	<p><i>Monografías de Contabilidad Industrial: Generalidades y prolegómenos</i> (Monographs on Industrial Accounting: Generalities and prolegomena) (C) 1st edn. 1926</p>	<p>It is a little book of 80 pages in which the author considers industrial accounting as an auxiliary accounting, technical or statistical, where the manufacturing operations are recorded. In the staggered building of the cost price, he considers the industrial cost price, the commercial cost price, and the sale price. He advises the use of the perpetual inventory system in the manufacturing account that he considers the "company dynamic account."</p> <p>As to the allocation of general manufacturing and commercial expenses, he proposes a simple consideration of their estimated amount in the first year. In successive years, he suggests their allocation on the basis of proportional rates of employed manpower, raw materials, the sum of both (method of cumulative supplements), or the production by time units (labor hours) of the previous year.</p> <p>He studies applied accounting by both subject and object, analyzing the main company classes. A chapter is devoted to administrative accounting (private and public sectors). Costs are studied within general accounting by means of a specific manufacturing account with a name depending on the type of company or industry.</p>	<p>Significant contribution with regard to the calculation of production costs. He outlines the different calculation methods for a joint production.</p>
	<p><i>Contabilidad aplicada</i> (Applied accounting) (C) 1st edn. 1931 3rd and final one 1949</p>		

Authors	Works	Contents	Other comments
Miguel Muñoz Arbeloa Bachelor of Commerce	<i>Contabilidad de la Industria Harinera</i> (Accounting for flour mills) (B) 1st edn. 1930	It is framed within the sector accounting and classifies the activities of a flour mill in: main activities, auxiliary activities, and general activities, describing the objective and features of each kind of activity. On its part, the production is classified in main activity (flour) and secondary by-products (bran and waste products). To allocate the latter to the main production, the author proposes the subtraction method, i.e., valuation of the by-products at their sale price and deduction of their total amount from the overhead costs.	The author's contribution is very useful, above all with regard to his analysis of financial and industrial accounting for flour mills, as well as his organic conception of the cost-finding process in a case of multiplicity of joint products with the application of the subtraction method.
	<i>Ideas Contables</i> (Accounting thoughts) (B) 1st edn. 1945	It has a general and informative nature with regard to accounting questions and practices of the time. Within the variety of questions dealt with, there are some regarding cost accounting. The book also deals with sector accountings, such as farming, electricity companies, transportation by trucks, and flour mills, the latter already dealt with in the author's previous book. By dealing with the structure and composition of cost price, the author considers direct cost, industrial cost, commercial cost, and full cost. The latter is the result of adding to the commercial cost the administrative general expenses employing a proportional rate. The sale price is obtained by adding to the full cost price a profit margin. The author does not consider the market situation and forces when it comes to fixing the sale price.	
Jaime Vicens Carrió member of the Real Academia de Ciencias Económicas y Financieras (Royal Academy of Economic and Financial Sciences) and of the Instituto Nacional de Racionalización y Normalización (National Institute for Rationalization and Standardization).	<i>Contabilidad Industrial</i> (Industrial Accounting) (C) 1st edn. 1943a 8th and final one 1975	It is a textbook in the theoretical-practical line. It deals with the scope, objective, and functions of industrial accounting, and analyzes the cost components and their calculation. It adopts the traditional cost classification: basic cost, production cost, industrial cost, commercial cost, and, if profit is added, sale price.	The author's main contribution is the spreading of German thought. In the bibliography of the 5th edition of <i>Contabilidad Industrial</i> , published in 1970, are quoted the works by Schneider [1949], Palle Hansen [1957], and H. Winding Pedersen [1952].
	<i>Costes y presupuestos del pequeño industrial</i> (Costs and predictions of the small industrialist) (C) 1st edn. 1943b Another work of this author is <i>Estudio y cálculo del precio de venta</i> (Study and calculation of sale price) (D) 1st edn. 1943c	It is also a textbook in the theoretical-practical line. It distinguishes between prediction and cost, i.e., prediction represents a probability and cost is a reality. The author professes an organic and predetermined conception of the cost-finding process. He defines the production center as a whole of machines-men-places. To calculate the center cost, its components are to be taken into account, that is, materials, manpower, and expenses. The application criterion has to be wide because it represents the calculation of the transformation cost in different stages. Each stage is represented by a center. He distinguishes between predictions and standards. As to the former, he takes into account the predictions control that allows checking the unit prices. The author thinks that the standards constitute an ideal point of reference and incentive, a target to reach. They must not be mistaken for the optima, which supposes the almost total utilization of the production factors. With the standards are possible two kinds of checking, one general and the other in percentage terms.	

## APPENDIX III

## AUTHORS OF THE SECOND HALF OF THE 20TH CENTURY UP TO 1978

(A) general works with some section devoted to cost accounting; (B) works on accounting applied to specific activities; (C) works on general cost accounting; (D) works on special facets of cost accounting

Authors	Works	Contents	Other comments
Antonio Goxens Duch professor at the School of High Commercial Studies of Barcelona; director of the School of Commerce of Sabadell; life member of the Real Academia de Ciencias Económicas y Financieras (Royal Academy of Economic and Financial Sciences)	<i>Curso de Contabilidad Aplicada por el Objeto (en especial Industrial y de costes)</i> (Course of Applied Accounting with regard to the object, especially industrial and cost) (B) 1st edition 1956 <i>Manual de cálculo de costes y contabilidad industrial</i> (Handbook on cost calculation and industrial accounting) (C) 1st edn. 1957 4th edn. 1974	Textbook. The author presents a stage cost classification and explains a cost finding staggered process in four stages. He follows an inorganic model in which is distinguished basic, industrial, commercial, and final cost. He makes a superficial exposition of the different proportional calculation methods (division, equivalences, additional quotas (supplements), and joint provisions). He refers to the "confusion method" that only attempts to find the total production cost as a whole. Following Schneider, he explains briefly the results finding in the accounting systems by orders and by sections. He also enumerates the Anglo-Saxon systems and finishes with a succinct description of predetermined systems.	He does not introduce original contributions to the subject.
		Textbook. It analyzes: <ul style="list-style-type: none"> <li>the components of industrial cost: raw materials (concept, classifications, warehouse questions, valuation of inputs); manpower costs (control methods of manpower, valuation, nominal and actual wages; charge to costs, recording on accounts, allocation, performance measurement, welfare services according to social laws); industrial equipment costs (classification of the tangible fixed assets, difference between rent and depreciation, reason and usefulness of investments, fixed assets renewal and impairment by use as deciding factor of investment, methods to allocate depreciation to costs); costs of manufacturing activities (production expenses, allocation, classification as direct and indirect expenses, fixed and variable, constant and periodic, allocation criteria, accounting); interest of own capital and entrepreneur's remuneration; stocks as fixed assets; waste; breakage; etc.</li> <li>cost findings methods; comparison between direct-costing and absorption costing</li> <li>determination of historical costs and predetermined costs, distinguishing among estimated costs, standard, and predictive</li> <li>differentiation in Schneider sense between external and internal accounting, analyzing the results found in both accountings.</li> <li>monistic and dual systems of accounts coordination</li> </ul>	The author makes a superficial analysis that does not present original contributions to cost accounting. The work is limited and serves only as a textbook for the students of the Schools of Commerce.
	<i>Contabilidad general: Con notiones de organización, administración y economía de la empresa</i> (General Accounting: with notions of organization and business administration) (A) 2nd edn. 1958a	Textbook that answers the syllabus of the subject general accounting of the official Schools of Commerce.	As to cost accounting, the book makes only reference in the first chapter where the economic activity and its main elements are studied.



Authors	Works	Contents	Other comments
Antonio <b>Goxens Duch</b> (continuation)	<i>Contabilidad de empresas</i> (Accounting for companies) (A) 1st edn. 1958b	<p>Textbook. It classifies costs in the following groups:</p> <ul style="list-style-type: none"> <li>• costs or prime costs with regard to its nature,</li> <li>• costs origin,</li> <li>• goods, products, or production stages, that is to say, the things on which costs are charged. With regard to the "analytical cost accounting systems," the book's author identifies the concept of costs systems as the link system and distinguishes: confusion system, radical monistic system, moderate monistic system, and dual system.</li> </ul> <p>He points out that in both systems, monistic and dual, it is possible to use a standard cost control or an historical costs method.</p>	Accounting complete course devoted to the student of the Banking Institute.
	<i>Contabilidad aplicada a empresas</i> (Accounting applied to companies) (A) 1st edn. 1959	Textbook. Although the work contents dealt mainly with accounting for companies, chapters IV and VII contain items related to costs.	The book does not introduce any novelty with respect to the author's previous works.
	<i>Contabilidad analítica industrial, según el Plan Contable General de Francia</i> (Analytical Industrial Accounting according to the General Standardization Plan of France) (D) 1st edn. 1960	Textbook. Exposition of the structure and methodology of analytical accounting (lesson 9) according to the French Plan, 1957 version: <ol style="list-style-type: none"> <li>1. current terminology</li> <li>2. accounts functioning method</li> <li>3. predetermined costs method</li> </ol>	As it is a mere description of the French Plan of 1957, the book neither introduces any novelty nor presents any remarkable aspects.
	<i>Selección de supuestos prácticos de Contabilidad aplicada por el objeto: (en especial industrial y de costes)</i> (Selection of practical problems of Applied Accounting with regard to its object: (especially industrial and cost accounting)) (B) 1st edn. 1968	It contains practical problems as material for explanations and class practices.	The book only contains the formulation of problems with blank sheets for solutions to be done in the classroom and delivered to the professor for correction.

Authors	Works	Contents	Other comments
Aramando Suárez Franck Master of Science in Commerce	<i>Contabilidad industrial aplicada a empresas transformadoras y distribuidoras</i> (Industrial Accounting applied to commercial and manufacturing companies) (B.C) 1st edn. 1956	<p>Informative text in the theoretical-practical line. From an inorganic point of view, it analyzes the main accounts used in industrial accounting. It distinguishes two main groups: tangible fixed-assets accounts and production or manufacturing expenses accounts. The latter can be classified according to their nature in raw materials, manpower, or manufacturing services according to their effect on the product. They can also be classified as direct or indirect expenses.</p> <p>As to the cost structure, the book distinguishes the following aggregates that can be calculated in a whole, by stages, by job orders, or by units:</p> <p>Prime production cost is composed of the addition of material costs and employed manpower.</p> <p>Manufacturing cost is the former cost plus the cost of manufacturing services.</p> <p>Sale price includes the previous cost classes and the commercial, financial, administration, and direction expenses plus the profit that the company wants to obtain.</p> <p>Starting from these definitions, the author explains questions regarding the functioning of the different accounts and expense entries taking into account their nature and use in the production process in order to find the corresponding cost prices. They can be calculated by direct measuring (raw materials and direct manpower) or by allocation rates (manufacturing services).</p> <p>With respect to commercial companies, the author only considers two cost components: purchase cost of the goods acquired for sale and operative cost, that is, expenses incurred for basic business functioning.</p> <p>Informative text in the theoretical-practical line: As regards costs, the author includes in his chart of accounts several accounts related to internal accounting.</p> <p>Following Pallo Hansen [1957], he identifies several interface variants between both accounting systems:</p> <ul style="list-style-type: none"><li>• Pure monism: Both accountings are assembled as a homogeneous whole.</li><li>• Monism with a mirror or reflex account, also called relative dualism: "All operations recorded in the internal accounting appear also in the external accounting by means of a special account."</li><li>• Pure dualism: The two accounting systems function with absolute independence of one another. The link between them, as accountings belonging to the same company, is maintained through a special account that collects in every period the movement which in some way has an influence on the initial relationship of both accountings. Moreover, at the end of the accounting year, the two accountings are combined to become one and a single balance is struck.</li></ul>	<p>It is one of the publications on the subject that offers a wide bibliography containing works of foreign authors such as Burton [1936], Dhor et al. [1946], Gillespie [1952], Hansen [1957], Kester [1939], Lasser [1957], Neuner [1954], Pedersen [1952], Schneider [1949], and Specthne [1949].</p> <p>Handbook on accounting's organization and mechanized procedures available at that time.</p>

Authors	Works	Contents	Other comments
<p>José María <b>Fernández Pirla</b></p> <p>professor of Business Administration at the Central University of Madrid; professor of Accounting at the Higher School of Commerce of Madrid; member of the Experts in Commerce Corps of the Exchequer.</p>	<p><i>Un ensayo sobre teoría económica de la contabilidad. Introducción contable al estudio de la economía de la empresa</i> (An essay on accounting economic theory. An accounting introduction to business administration) (A)</p> <p>1st edition 1957.</p>	<p>Textbook. The author identifies three natural stages in cost analysis: classification, location, and allocation. He makes the fundamental distinction between external or financial field and internal field. It is in the latter that the economic process of cost building takes place, according to the values circulation model explained by Schneider. On this basis, he explains the functions of external and internal accounting. He devotes a section to expose costs relativity and the two kinds of problems: ones of technical nature (input factors) and ones of an economic nature (input valuation). He explains the formation of the company cost price through a model representing its inorganic structure:</p> <ul style="list-style-type: none"> <li>• basic or direct cost = raw materials + manpower</li> <li>• industrial cost = basic cost + factory overhead expenses</li> <li>• exploitation cost = industrial cost + financial expenses</li> <li>• company cost = exploitation cost + administration expenses</li> </ul> <p>He classifies the systems of recording and representing cost accounting data on the basis of two criteria: 1. the kind of valuation used, historical system (or <i>a posteriori</i>) and a standard system (or <i>a priori</i>), and 2. the core considered as essential in the accounting system (job order system or production centers system). He exposes the three interfaces that Schneider considers between internal and external accounting:</p> <ul style="list-style-type: none"> <li>• radical monism</li> <li>• moderate monism</li> <li>• dualist system</li> </ul> <p>He describes briefly the different calculation methods in the case of joint production of a variety of co-products (allocation, sub-products, subtraction, and recovery), as well as the functioning of cost accounting on the basis of standards.</p>	<p>His main contribution is the introduction and spreading of Schneider's thought in Spain.</p>

Authors	Works	Contents	Other comments
Jose <b>Castro</b> <b>Chornet</b> professor of economic theory at the Universidad Complutense de Madrid	<i>Apuntes de contabilidad de empresas industriales</i> (Notes on accounting for industrial companies) (A) 1st edn. 1959.	<p>Textbook. The author proposes a chart of accounts structured according to some kinds: kind 0, "cuentas yacientes" (lying accounts); kind 1, "financial accounts"; kind 2, "expenses and neutral products"; kind 3, "not recorded in auxiliary books"; kind 4, "expenses and costs recorded in auxiliary books"; kind 5, "of free disposal (auxiliary exploitations)"; kinds 6 and 7, "costs centers"; kind 8, "products units"; and kind 9, "sales costs and results."</p> <p>According to the author's definition, the objective of industrial accounting is the cost finding with a double purpose – on the one hand, to decide the sale prices of our products in order to fix the desired profit and, on the other hand, to check the running of the production and the earnings of the company.</p> <p>With regard to the costs classification, he distinguishes between those predicted and actuals, only known at the end of the manufacturing process. He calls the latter effective or accounting costs. Both must be compared in order to know the deviations. He makes also a distinction between prime or basic costs (raw materials and direct manpower) and indirect ones (factory overhead costs, company general costs, and sales costs). Cost finding is explained according to the structure traditionally accepted by other authors:</p> <ul style="list-style-type: none"> <li>• basic costs: raw materials + direct manpower</li> <li>• manufacturing costs: basic costs + factory overhead costs</li> <li>• industrial cost: manufacturing costs + company general costs</li> <li>• total cost: industrial cost + sales expenses</li> </ul> <p>As to the interface between industrial and general accounting, the author presents three possibilities:</p> <ol style="list-style-type: none"> <li>a) keep one accounting only</li> <li>b) keep an autonomous industrial accounting wholly developed, only synthetically transferred to the general accounting</li> <li>c) keep an autonomous closed industrial accounting considered as belonging to a third division, weighted, on a different basis, and per cost center.</li> </ol> <p>The author also studies the allocation of indirect costs, proposing several calculation methods, such as simple division, weighted, on a different basis, and per cost center.</p>	Despite being notes on lessons explained in the classroom, the book is an excellent exposition of the state of the art at a theoretical and practical level.
Alvaro <b>Fernández Suárez</b>	<i>Los costes de comercialización</i> (Commercial costs) (D) 1st edn. 1961	<p>It is a theoretical informative work. Following the works of Neuner [1954] and Juan René Bach [1943], the author makes a superficial analysis.</p> <p>He distinguishes between the accounting of company commercial cost (he adds the production cost to find the total cost of the product) and the social commercial cost or cost in macroeconomic terms; that is, the expenses made by the community in the activities that bring the products to the final consumers.</p>	Paper presented before the Asamblea de las Cámaras de Comercio, Industria y Navegación de España (Assembly of Commerce, Industry, and Navigation Chambers of Spain)
Luis Miguel del <b>Pino Barrera</b>	<i>Sistema moderno de contabilidad agrícola: texto con su agenda-diario</i> (Modern system of farming accounting: text with diary) (B) 1st edn. 1962	<p>Informative text. Its only contribution worthy of mention is the proposal of a general chart of accounts for farming. However, its approach is monistic and the proposed utilization accounts are neither accompanied by explanations on their functioning nor by the cost finding of the products.</p>	The book is based on the bibliography of the 30s; consequently, it is rather out-of-date.

Authors	Works	Contents	Other comments
Joaquín <b>Bastarós Tolosana</b> Bachelor of Commerce; Chartered Auditor; Graduate in Social Sciences	<i>Técnica del control económico en las cooperativas</i> (Techniques of economic control in the cooperatives) (B) 1st edn. 1963 2nd edn. 1965 3rd edn. 1968	Informative text. It deals with cost questions in the 5th part entitled "Costs and depreciation." This part is composed of three lessons. The first two, numbers 26 and 27, are expressly devoted to costs. In lesson 26, the different accounts containing specific cost elements by cooperatives are explained (raw materials, manpower, factory overhead expenses, supplies and alien services, and general expenses of the cooperative). Lesson 27 is devoted to what the author calls applied costs. In this lesson, the "costs statements" of this type of enterprises are explained. They are merely the grouping of expenses of a varied nature known generally as production, sale, industrial, and total cost. direct raw materials + direct manpower + factory costs = industrial cost industrial cost + sale expenses + administrative expenses + financial expenses = total cost	The analysis is superficial and of no special interest.
Juan Vives <b>Segura</b> secretary general of the Union of Iron Foundry Workers of Barcelona; manager of the company Fundiciones Arques, of Barcelona	<i>Contabilidad analítica simple para fundición</i> (Simple analytical accounting for foundries) (B, C) 1st edn. 1964	Practical text. For the author, cost accounting has the objective of reducing costs without increasing administration expenses. He proposes a simple system gathering with all the basic elements to determine cost, with possibilities to break the process into intermediate stages if so required. He proposes a grouping of products such as metal, casting, machine, males, etc. In every group will be distinguished different factors such as raw materials, wages (including social security, bonus, etc.), and auxiliary expenses. To all these costs will be added depreciation, bank expenses, transportation, overhead, and direction expenses. Finally, the author presents a model of sheets, pricing type, as well as others to control client orders.	The book is a critic to the unnecessary complexity of some cost-finding systems, which are of almost impossible application for companies of smaller dimension. It aims to offer them feasible systems.
Luis <b>Carrascoso Mendizábal</b> Master of Science in Commerce; assistant professor at the Faculty of Political, Economic, and Commercial Sciences of Madrid	<i>Contabilidad de costes y Rendimientos Standard</i> (Cost Accounting Standard Yields) (D) 1st Vol. 1965 2nd Vol. 1966	Textbook. The author bases his analysis on the German thought and on Schneider's line of reasoning. On this basis, he proposes a cost classification with regard to their necessity instead of on their fixed or variable nature because he considers it more right for the categorization to be into necessary and unnecessary costs rather than into fixed and variable. He also distinguishes among historical cost ( <i>a posteriori</i> ), estimated cost or pricing (calculated <i>a priori</i> on the basis of the experience of previous years), and standard cost (a cost calculated on a more scientific basis to be obtained according to the pre-established plan). He professes an organic conception of the cost-finding process and distinguishes in this respect the following stages: application, classification, location, and allocation. He also deals with the analysis of the differences between the allocation model of full cost and direct cost. In this regard, he highlights that they are not opposite systems but different ways to find the costs that serve different purposes.	In 1966, the author published the second volume of his work which has a subtitle of <i>Estructura Económica de la Contabilidad</i> (Economic Structure of Accounting). The work is of a much more general nature than the previous one, and is structured in three parts, devoting a chapter to the explanation of the French Accounting Plan of 1957.

Authors	Works	Contents	Other comments
Jesús María <b>Landa Garamendi</b> professor at the Deusto University and at the I.N.S.I.D.E. (International Institute of Business Administration)	<i>Contabilidad analítica</i> (Analytical accounting) (C) 1st edn. 1966 2nd edn. 1973	<p>The first part of the work deals with the essential concepts of cost accounting (cost and cost price, cost components, classification of charges in general accounting and cost accounting, calculation period, actual costs and standard costs systems, framing of analytical accounting within management control).</p> <p>The second part deals with:</p> <ul style="list-style-type: none"> <li>• materials control (classification, order and reception, inflows and outflows, stocks, control of products in process, goods returns, sub-products, etc.),</li> <li>• manufacturing control (classification of charges or cost concepts, division of the company in production centers, charge allocation to the centers, allocation of the general department and auxiliary services costs, and cost calculation of production units),</li> <li>• distribution control (definition and enunciation of the commercial expenses features, allocation of commercial charges to the costs and cost prices).</li> </ul> <p>The third part of the book deals with the functional organization, the place of analytical accounting in the organizational structure of the company, and the accounting organization. Moreover, the French Accounting Plan of 1957 is the object of deep study. In turn, the Sisorg Accounting Plan of 1932, the German Plan of 1937, and the General Accounting Plan of the Spanish Institute of Account Auditors of 1962 are briefly analyzed in the chapters devoted to analytical accounting.</p>	textbook addressed to the students of the Deusto University and I.N.S.I.D.E.
	<i>Contabilidad analítica aplicada</i> (Applied Analytical Accounting) (C) 1st edn. 1967	<p>It is a concealed second edition of the first work <i>Contabilidad analítica</i>, although improved and extended. The structure is identical, with the exception of the third part that presents an appreciable improvement with regard to the previous work. In fact, it introduces a section devoted to the establishment of standards and estimates or predictions. For this purpose, three chapters are dedicated to an analysis of the formulation of the standards to establish, the basis for their determination, the calculation and valuation of raw materials, the direct and semi-direct manufacturing and commercial costs, and fixed charges or structure costs of centers, sections, and departments.</p>	
	<i>Como implantar la contabilidad analítica</i> (How to implant an Analytical Accounting) (C) 1st edn. 1972	<p>In his third work, <i>Como implantar la contabilidad analítica</i>, besides the questions already dealt with in the two previous works, the author explains a direct-costing model, laying stress on its suitability for the profitability analysis by products and production centers.</p>	Despite the influence exerted by French standardization on the author, he considers analytical accounting as an extra-accounting complement of general accounting.

Authors	Works	Contents	Other comments
J. Aragón Soldado, J. Aragón Rodríguez, and E. Aragón Rodríguez	<i>Tratado de Contabilidad Analítica. Teoría y práctica de los costes "Standard"</i> (Treatise on Analytical Accounting. Theory and practice of "Standard" costs) (D) 1st edn. 1966	In the first part of the work, the authors deal with the basics for establishing a cost accounting organization of the company (production organization, organization and responsibility chart), production planning (job orders, instructions on working procedures, methods engineering), and departments organization (materials and supplies, auxiliary services, manufactured products, containers, and packaging). In the second part, they deal with the standard cost system and expose the different points and procedures (objectives, definition, constant production or production by orders placed), costs finding (machine hour cost, direct labour hour cost, commercial distribution cost, direct manpower hour cost, supplies cost, materials cost), and allocation of general expenses. The third part is devoted to explain the launching of the standard cost system through a collection of practical examples. The fourth part describes the main kinds of reports provided by cost accounting: quality of the labor performed, stocks, production costs of a center, etc., to inform different users: a center foreman, center, division, or department heads; executives of the sales department; director of the sales department. The work ends with a series of cost reports compared to the average of reports submitted in general at the industrial branch to which the company belongs.	It presents the curious circumstance to have been written by J. Aragón Soldado in collaboration with his two sons.
José María Ventosa Rostch	<i>Contabilidad analítica de explotación: (costos)</i> Analytical Accounting of manufacturing (C) 1st edn. 1966	Informative text. First of all, the author presents the basics of cost finding; that is, the necessity for knowing the cost prices, the frontier between general accounting (external accounting) and industrial accounting (the author uses this expression as a synonym for internal accounting), orientation of industrial accounting toward management, organization of the productive process. Thereafter, he deals with the expenses or charges and their classification criteria in both general accounting and industrial accounting. He also deals with the calculation methods of cost prices. Among them, he analyzes the empirical methods, job-order costing method when individual production centers or departments work on a variety of products rather than just one, homogeneous centers method, standard cost accounting, activity-based costing, direct costing, marginal costing, and the George Perrin method. On the other hand, he criticizes the use of the "empirical methods" that define on the whole simplistic techniques to calculate cost prices. These techniques have been put into practice since the beginning of the century and were the first used by industrial accounting. He thinks that they are insufficiently analytical and old-fashioned because they make the allocation of general expenses by means of cumulative supplements, a practice that according to the author "is presently eradicated from industrial accounting."	It is a handbook on cost calculation whose main virtue consists of its contribution to spread the most advanced accounting techniques of its time.
Francisco Rodrigo	<i>Contabilidad Marginal</i> (Marginal Accounting) (D) 1st edn. 1967	Theoretical-practical handbook. The author supports the use of marginal costing for two main reasons. On the one hand, because he does not value the full-cost method, which he calls the "classic method," in the sense of old passé. However, he recognizes that it may be useful with regard to investment decisions. On the other hand, he recognizes that direct costing has inaccuracies. It is based on a complete differentiation between fixed and variable costs. However, it is not always as easy to make this distinction as it might appear at first sight. The author thinks that marginal costing is based on more scientific foundations. It completes the direct costing method with an analysis of variances of the costs directly or indirectly allocable according to the activity level and the maximization of total benefit. This is a question that is linked to the production capacity of the firm and has to consider the margin of the different products, the technical conditions of the firm, the knowledge of its possibilities, etc., in order to be able to choose the most interesting production.	In the arguments presented to criticize full-cost models is visible the influence of Schneider's thought, but this author is not quoted. The same omission occurs with regard to the division of cost.



Authors	Works	Contents	Other comments
Manuel Domínguez Alonso professor at the Higher School of Business Administration (ICADE); instructor of costs and budgetary control of the National Service for Industrial Productivity of the Industry Ministry	<i>Contabilidad microeconómica: Técnicas fundamentales de contabilidad microeconómica interna, presupuestaria y crítica</i> (Microeconomic Accounting: Basic techniques of internal, budgetary and critical microeconomic accounting) (A) 1st edn. 1967	Textbook addressed to the students of ICADE. On the basis of the cost definition [Pedersen, 1952; Schneider, 1949; Mellerowicz, 1936], the author assigns to cost accounting as a general function and objective the finding of prices and the rational direction of the production. As specific objectives he assigns it the valuation of the elements of inventory, the calculation of standard costs, special calculations to make occasional comparisons, etc. Moreover, he explains the different components of a cost accounting system: cost elements, cost centers, cost bearers, and stages of the building cost process (contraction and classification of the expenses, time period adjustment, conversion of expenses into costs, location [immediate or postponed allocation], and obtaining products and services). He continues presenting the accounting approaches of radical monism, moderate monism, and moderate dualism. Afterwards, in the remaining chapters, he develops the questions of cost calculation (study of components, centers and bearers), and the study of systems for accounting recording and representation: systems of costs composition, actual cost, job orders, process-based costing, mixed cost, preventive costs, estimated costs, standard costs, predictive costs, and direct costs. Apart from this, he introduces a chapter on the estimation and statistical control of cost functions. The author offers three methods to identify costs: approach by accounting methods; identification of the cost-production relationship by technical means; statistical identification.	The book is a compilation of the main questions of an accounting nature that an executive of a company has to know. He completed later these notions with a set of problems and exercises that were published in two separated books: <i>Ejercicios prácticos de contabilidad de costes: Control presupuestario y análisis de balances</i> (Practical exercises on Cost accounting: Budgetary control and balances analysis) (1968a) and <i>Ejercicios prácticos para el desarrollo de la disciplina "Contabilidad especial"</i> (Practical exercises to develop the subject "Special accounting") (1968b).
Manuel Domínguez Alonso Luis Velasco Roa professor at the Higher School of Business Administration (ICADE)	<i>Control Económico de Empresas</i> (Economic Control of Enterprises) (C) 1st edn. 1969	Textbook. In the first chapter, the author explains the general concepts of cost theory. The second chapter is devoted to the definition, functions, and objectives of internal accounting and its approaches: radical monism, moderate monism, and dualism. Chapters 3 to 9 are dedicated to the study of the elements of a cost accounting system, that is, components, centers, and cost bearers. In chapter 10, the authors expose the current approaches to structure a cost system: Anglo-Saxon, French, German, Spanish, and Italian. Chapters 11 to 13 study the different costs systems: by manufacturing orders, processes, mixed orders, or works and cost centers. Chapters 14-18 are devoted to the study, definition, and determination of different concepts, such as preventive costs, estimated costs, and, above all, standard cost, as well as to the operational process to implant and apply it. Finally, the book deals with the programming and control by PERT. The work has a practical nature that is complemented by a wide collection of exercises.	According to the explanations of the authors, the work aims to satisfy the needs of the enterprises (executives, technicians, and administrative officers), as well as public-sector organizations in the field of cost accounting.
Enrique Moliné Bachelor of Commerce; industrial engineer at a textile company	<i>Contabilidad analítica de inmovilizaciones por decalco</i> (Analytical Accounting by "decalco" of tangible fixed assets) (D) 1st edn. 1967	The book deals with the questions regarding the accounting for tangible fixed assets, that is, reasons for depreciation, accounting forms, etc., all of it illustrated with practical examples. The only point of interest from the costs angle is a short reference to the concept of depreciation. It is considered not only as a charge in the accounting year linked to the valuation of assets or to the processes of replacement investment, but also as a cost to be incorporated by the centers to which the assets are assigned.	It is a very limited work because it is linked to the time when accounting by "decalco" was in fashion. As it is known, this accounting method was an attempt to arrange and to classify the information and the accounting of the companies by means of a pseudo-mechanical system, called "decalco."

Authors	Works	Contents	Other comments
Ricardo <b>Bañez Ballano</b> economist; head technician of the Economic Administrative Department of T.E.A.	<i>Coste estándar por secciones homogéneas: Teoría y práctica de su aplicación</i> (Standard costing by homogeneous sections: Theory and practice of application) (D) 1st edn. 1969	The book begins with an introduction to the objectives of cost accounting to value certain assets, to know the product cost, and to control management. For this purpose, the author analyzes the concept of standard cost (maximum, medium, ideal, programmed) and the costs control systems. He presents the standard costing by sections as the device to solve the allocation problem of indirect costs. He allocates them to sections first and afterwards to products. Direct costing is presented as a means to find out the coverage margin of indirect expenses since it is the difference between sales income and sales direct expenses. In this regard, the author reveals its advantages and its drawbacks. He deals besides with the concept, shape, and calculation of cost functions. He finishes exposing the polemic on the distinction between short-term and long-term periods and the choice of the most suitable variable to measure the activity most linked to the expenses. He analyzes also the "famous chart of break-even point" as the author calls it. Likewise, the author handles in depth the matter of homogeneous sections which he considers the best system.	The author's practical training is felt in the whole book, whose main subject focus on the standard system by homogeneous sections. His ideas on the matter were often quoted by Spanish authors subsequently.
Antonio <b>Herrero Alcon</b> doctorate in agricultural engineering	<i>Contabilidad para la empresa agraria</i> Accounting for farming (B) 1st edn. 1969	It is an informative book. The part regarding costs is developed in chapters 14 and 15, volume 2. It only mentions the use by double-entry of the agricultural production accounts (wheat, cattle, chick peas, etc.) and preparation ones (fallow fields, expected harvest, etc.) as a means to establish production unit costs. These accounts are defined by the author as typical accounts of internal accounting. He even conceives them as divisible by stages, such as newborn piglet, baby piglet, piglet grown up, and fat pig. In such a way in every stage, the product-in-process accumulates and passes on its costs to subsequent stages, the process continues to the final stage when total costs are accumulated in the finished product. The author conceives that these accounts function as mixed accounts in a monist system. They are charged with production costs and credited by the value of the product. Their balance represents, consequently, the benefits or the losses of the manufacturing.	The work is published in two volumes and constitutes an informative study of general accounting practices in agriculture.
Enrique <b>Ballester</b> doctorate in agricultural engineering; economist; professor at the Technical School of Agricultural Engineering of Madrid	<i>Contabilidad Agraria</i> (Agricultural Accounting) (B) 1st edn. 1969 2nd edn. 1973	Textbook. It deals properly with financial accounting of farms. Nevertheless, chapters 9 and 10 describe the production cycle and questions related to costs, such as definition, differences between expenses and costs, classification of expenses and costs with respect to their nature (raw materials, wages, diverse expenses, electric power, contracting and piecework, depreciation). All of these expenses and costs categories are defined and explained as well as the parts into which a company exercising this specific economic activity is divided: cultivation (wheat, barley), livestock (sheep, cattle, chickens), forest, fallow fields. The accounting treatment of sections or cost centers, cost allocation to them, remuneration estimated for the work of the owner and his family, etc. are additional topics.	Handbook addressed to the students of the Technical School of Agricultural Engineering of Madrid
	<i>Técnica de la Industria Papeler</i> (Paper Mill Technique) (B) 1st edn. 1970	The work informs the creation of the Central Commission of Accounting Standardization at the beginning of 1966, precedent for the Institute of Accounting Standardization that in 1968 presented the first proposal of the General Accounting Plan. After a very short description of the activity of the paper-mill industry, it looks through the different accounting groups considered in the plan and their adaptation to the sector. Among them, it chooses the questions examined in the Group 0, called "Analytical Production Accounting," that is defined as an accounting capable of great flexibility especially devoted to control the prices of manufactured products. The starting point for this control, in order to guarantee better the future of the company, is a budget, carefully prepared with pricing. The information will be recorded by double-entry, both in kind and in monetary units when possible. It also mentions the need to analyze the variances between budgeted amounts and actuals.	It is a paper presented before the Assembly of the Technical Economic Committee of the Paper Mill Industry. Its main contribution is the adaptation of the Accounting Plan to the manufacturing of paper, cardboard, card, and similar products.

Authors	Works	Contents	Other comments
<b>Juan Cruz Larrea Arechavala</b> professor of the Higher Center of Applied Studies; Master of Science in Commerce; deputy accountant general of the Spanish National Telephone Company	<i>Contabilidad de Costes I: Los sistemas para el cálculo de costes</i> (Cost Accounting: cost calculation systems) 1st edn. 1971a (C) <i>Contabilidad de Costes II</i> 1st edn. 1971b (C) <i>Contabilidad de Costes III</i> 1st edn. 1971c (C) <i>Contabilidad de Costes IV</i> 1st edn. 1971d (C)	<p>Textbook. The first volume deals with the general questions regarding the cost finding and identification of the objectives of a cost accounting system: finding the total benefit, finding the benefit per product or service, and management control.</p> <p>As regards to the finding cost systems, the author makes a double classification with regard to the allocation level and to the allocation method. Moreover, following Schneider, he distinguishes three accounting options: radical monism, moderate monism, and dualism.</p> <p>The second volume has two parts: the full-cost systems and the systems of homogeneous sections.</p> <p>In the first part, the author handles the foundations of the inorganic system and in the second he deals with the organic, that is to say, the organization by homogeneous sections or cost centers.</p> <p>In the third volume, the author explains the systems of direct costing and marginal costing.</p> <p>The last volume is devoted to standard cost accounting.</p>	textbook for the students of the Higher Center of Applied Studies
<b>Victor Arana</b> Master in Law; Bachelor of Commerce Officer of the Exchequer	<i>Contabilidad de Empresas</i> (Accounting for companies) (A) 1st edn. 1971	<p>It is an informative book, supported by both a practical sense and a solid theoretical foundation. It is mainly addressed to students and professionals of corporate accounting. It has three parts. The first is devoted to general accounting; the second deals with analytical accounting and studies its concept, scope, and contents. After exposing the objectives of analytical accounting, it looks through the different cost systems in the course of its history: classic system, sections system, direct costing, standard costing, ending with a reference to other cost systems, such as the one by George Perrin [1968] and differential costs. The second part finishes with an overview of the systems and their accounting procedures.</p> <p>The third part is consecrated to planned and standardized accounting. A chapter is devoted to Class 9 "Analytical Accounting of Production" within the French Accounting Standardization (1957 Plan) and another to the same within the Plan Sisiorg (Accounting Organization System) proposed in 1932 by Ignacio Aspichuea, Master of Science in Commerce and Chartered Auditor, which was the precedent for Spanish Accounting Standardization.</p>	The book was awarded the Prize Ediciones Deusto commemorating the foundation of the School of High Commercial Studies of Bilbao.

Authors	Works	Contents	Other comments
Andrés <b>Fernández Romero</b> economist; Bachelor of Commerce; trustee-director general of Consultores Españoles, S.A.	<i>Contabilidad de Costes</i> (Cost Accounting) (C) 1st edn. 1971	<p>The work is divided into two parts. In the first chapter of the first part, the author explains the objectives of cost accounting and the cost description (nature, customers, etc.) in order to control them; the place where the costs originate (costs by sections), in order to control every section; the cost of the finished products in order to value the stocks, to find out the result per products, establish sales prices, stop unprofitable production, etc.; the production and sales program in order to maximize profit, and the merfinking models (radical monism and radical dualism).</p> <p>In the second chapter, the author studies the calculation procedures and the difficulties of a cost system derived from the allocation of indirect costs (in proportion to direct labour hours, in proportion to the value of direct costs, in proportion to the value of direct manpower, in proportion to the value of direct materials, in proportion to the weight, volume of each product, etc.). Moreover, he defines two basic cost systems: full costing (absorption costing) and direct costing (marginal costing), as well as two methods historical costs and standard costing. The third chapter deals with the "subsystem" of homogeneous sections, detailing the application of the method and the finding of the unit product cost.</p> <p>In chapter 4, the author analyzes the direct costing system as a solution to the disadvantages of the homogeneous sections model (complications due to the excess in breaking down, arbitrariness in allocation, etc.)</p> <p>Chapter 5 compares the results of full costing and direct costing, stressing the advantages and drawbacks of the latter.</p> <p>In the second part, the author explains the standard costing systems (traditional and by homogeneous sections) by analyzing not only the application peculiarities, but devoting a section to compare them with historical costs.</p> <p>Informative textbook. The work is structured in two parts. In the first, the factors that determine the cost amount and structure are studied. The second describes the applications and limitations of the critical point and the marginal analysis at the time of decision making.</p> <p>As to the factors determining the level and structure of the costs, the authors think that the main ones are the price of production factors (raw materials, manpower, taxes, transportation, etc.) and the production batch, whose minimal amount can be calculated through direct costing.</p> <p>They are also concerned with the utilization of the production capacity and consider two kinds of fluctuations with regard to a full use of this capacity: seasonal variations and cyclical variations. Following Gutenberg [1970], they distinguish three adaptation forms of production capacity to seasonal and cyclical variations: adaptation in intensity, time adaptation, and amount adaptation.</p> <p>In the second part, the authors study the break-even point dealing with its analytical and graphical determination as well as with the usefulness of its analysis, <i>a priori</i> and <i>a posteriori</i>. The explanations are illustrated with practical exercises.</p> <p>The part finishes mentioning the opinion of Joel Dean [1942] on the limitations of break-even point analysis.</p>	<p>Although the work is published in two books, they are properly the two parts of a notebook containing the notes taken in class on the matter "cost accounting," a component of the Business Administration at the Higher Center of Applied Studies. The theoretical explanations are illustrated by practical examples.</p>
José María <b>Veciana Verges</b> doctorate of Science in Economics and Social Sciences; professor at the Higher Centre of Applied Studies.  Enrique <b>Genesca Garrigosa</b> Master in Economics and Law; professor at the Higher Center of Applied Studies.	<i>Los costes como base para la toma de decisiones</i> (Costs as basis for decision taking) (D) 1st edn. 1973	<p>The work, that studies the cost applications for decision making on the basis of operations research, has an extensive bibliography, particularly of foreign authors.</p>	

Authors	Works	Contents	Other comments
Oscar Luengo Fernández	<i>Cálculo de costos por el sistema de las dos funciones características</i> (Cost calculation by the system of the two characteristic functions) (D) 1st edn. 1973	Informative. The author explains by means of a practical example the "system of the two characteristic functions" or Cost-Volume-Profit analysis for the calculation of "breaking even." He presents this system as a revolution with respect to the normal or classic systems (by absorption), due to its easy operation, simplicity, and the information that it provides for the determination of the sale price, outsourcing decisions, etc. Through a very simple practical example with two selling products, he develops the calculation of the break-even point. To do it, he only assigns to the product the material and manpower costs, which he considers proportionally variable, without any more precision. To keep this method, he recommends carrying on annual revisions of the characteristics of these functions in order to bring changes in structure, wages, raw materials, etc., up to date. These changes will be directly recorded on cost cards for each product on which its sale price will also appear.	Didactic report in which without any conceptual exposition, the direct costing model is presented interlinked with the break-even calculation. No reference is made to its theoretical foundations or to its advantages and drawbacks.
Francisco Morales Moreno accounting professor at the College of Business Administration of Jerez de la Frontera, Master of Science in Commerce, Chartered Auditor	<i>Temas de Contabilidad de Gestión</i> (Management Accounting Items) (A) 1st edn. 1974	Informative textbook. The author devotes the first chapter to find out the amount needed as operating capital. In this respect, he mentions two kinds of alternative methods: the indirect and the direct. Among the latter, he indicates the terms of encashment and payment [Calmes, 1911], funds analysis [Fernández Piria, 1957], the relationship to the break-even point mentioned by Gesteberg [1964] with regard to the management of the Cash Department, etc. Afterwards, he presents for each method two practical examples of calculation: the one very extensive showing the calculation method step-by-step and the other showing only the main lines. He also explains direct costing, analyzing it and presenting current arguments as to its advantages and drawbacks. He follows by studying standard costing and its relationship with direct costing. He goes through the form to use standard costs and stresses one of its most important aspects, the analysis of variances. The following chapter is devoted to provisional accounting. After indicating its concept, defining its objectives, and the reasons for its "recent" incorporation into the accounting world, he deals with its action program, explaining which partial programs are necessary in order to be able to itemize clearly the previous assumptions to split the activity of the company: sales, production, administration and financing, and investments. In the chapter dedicated to accounting systems, he explains first of all their concept and classification. Subsequently, he refers to the principles and rules that lead us to an adequate perception of the everyday economic and financial events of the company and permits reaching the objectives of accounting. In this respect, he distinguishes among three accounting approaches: "patrimonial" approach [Vincenzo Masi, 1962], "profit" approach [Gino Zappa, 1939], and matrix accounting. As an example of the author's modern conception and approaches to accounting, let us mention that he considers accounting an empirical science that has recently taken great steps forward in its theoretical foundation, thanks mainly to Richard Mattessich among others and his work <i>Accounting and Analytical Methods</i> [1964], a basic mainstay of accounting axiomatization. Like in previous chapters, explanations on matrix accounting are developed with practical examples.	The work contains a suitable theoretical basis that is accompanied by a set of very interesting exercises. It is preceded by a prologue, written by Jose Rivero, who at this time was professor of accounting for Companies and Cost Statistics and director of the Accounting Department at the University Complutense of Madrid.

Authors	Works	Contents	Other comments
<p><b>José Luis Alfaro Alonso-Miñón</b> Bachelor of Commerce; accountant of the State</p> <p>José Luis <b>Páined Pérez</b> accountant of the State</p>	<p><i>Contabilidad General y de Empresas</i> (General Accounting and for companies) (4) 1st edn. 1975.</p>	<p>Textbook. Following Lawrence [1953], the authors define Cost Accounting as “the accounting that aims to apply the principles of the general accounting to record the production expenses. In such a way the accounts kept with regard to production and sale can orient the company management to determine the production costs and to achieve an economic exploitation more efficient and lucrative”.</p> <p>Following Fernandez Pirla [1957], they distinguish among classification, placement and allocation of costs. This shows the cost formative structure, according to an inorganic conception of same.</p> <p>They look briefly through the components of industrial cost: raw materials, manpower, industrial overhead.</p> <p>In the section devoted to estimated costs, historical costs and standard costs, they offer a general idea of them and distinguish two methods to keep cost accounting: by historical cost or <i>a posteriori</i> and by estimated costs or <i>a priori</i>.</p> <p>It is a theoretical-practical work that develops a sector application of cost accounting in a very pragmatic line. It offers:</p> <ul style="list-style-type: none"> <li>• an analysis of the chart of accounts used presently by the savings banks and its adaptation to the General Accounting Plan for better service to savings banks;</li> <li>• a management analysis according to the present needs of speed and effectiveness demanded by the dynamism of the times;</li> <li>• a revision of the accounting cycles and the adaptation of analytical accounting to general accounting; an improvement of the information in order to obtain a more effective management; and</li> <li>• an analysis of the production account with its repercussions and orientation at different departments.</li> </ul> <p>After the introductory chapters dealing with accounting planning in general and its application to financial entities in particular, the author proposes a chart of accounts for savings banks, studying in detail the main and auxiliary sections.</p> <p>Chapter 4 is devoted to the analysis of internal activity based on analytical accounting. The following chapter exposes new accounting orientations, including the application of the direct-costing model to a savings bank. The author devotes chapters 7 and 8 to management control at financial enterprises and to its application for savings banks.</p>	<p>The book has 23 chapters of which chapter 20 is devoted to cost accounting. Its contents focus on the objectives of this accounting, offering a rather superficial view of estimated, historical, and standard costs.</p>
<p><b>Germaín Pérez Ollauri</b> Master of Science in Commerce; Chartered Auditor; doctorate of Science in Economics and Business Administration; professor at the Faculty of Economic Sciences; director of the Accounting Department and deputy director general of the Spanish Confederation of Savings Banks</p>	<p><i>Planificación contable, Contabilidad Analítica y análisis de gestión en las Cajas de Ahorros</i> (Accounting planning, Analytical Accounting and management analysis at the Savings Banks) (D) 1st edn. 1977</p>	<p>The work studies accounting at savings banks owing especially to the need for analyzing the costs. It combines a pure research methodology with a practical approach on account of the author's professional dedication.</p>	

