

2010

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Praquin, Nicolas (2010) "Credit Lyonnais in France (c. 1871-1918): Using cash flow analysis to assess risk in banking;" *Accounting Historians Journal*: Vol. 37 : Iss. 1 , Article 2.

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Accounting Historians Journal
Vol. 37, No. 1
June 2010
pp. 1-28

2008 Vangermeersch Award Winner

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THE CRÉDIT LYONNAIS IN FRANCE (c. 1871-1918): USING CASH FLOW ANALYSIS TO ASSESS RISK IN BANKING

Abstract: In the absence of accounting rules, financial reports and disclosures were of little use to shareholders and stakeholders before World War I. To offset the unreliability of financial information, several banks, including the Crédit Lyonnais, implemented a system of accounting analysis that, in essence, anticipated modern financial-analysis tools based on funds statements and cash-flow statements. This paper, based on the Crédit Lyonnais archives, sets out to explain the purpose of this method, to present the different concepts employed, and to show how they interact. The relevance of this model is assessed through two case studies.

INTRODUCTION

After the failure in France of a number of Saint-Simonist¹ initiatives, such as Laffitte's *Caisse Générale du Commerce et de l'Industrie* in 1837 and the Pereire brothers' *Crédit Mobilier* from 1852 onwards, mixed banks (banks combining both commercial and investment-banking activities) emerged at the same time as large department stores. They would be called "savings banks" before World War I, having been labeled on occasion with the rather pejorative term of "financial bazaars" [Bigo, 1947, p. 182].

¹The French social philosopher and reformer Claude Henri de Rouvroy, Comte de Saint-Simon (1760-1825), was one of the founders of modern industrial socialism and evolutionary sociology. Indeed, Auguste Comte, who is widely seen as the father of sociology, was one of his secretaries. Saint-Simon denounced the privileges of noble birth and saw the nobility essentially as "men of leisure" (*oisifs*), idle hornets (*frelons*) who exploit a mass of "workers" (the bees). He argued for the idea of creating a new society, one that relied notably on re-organizing the economy and credit and one in which industrialists, thinkers, and artists were to lead the nation. His arguments won over a significant vocal fringe of engineers, mostly graduates from the *École Polytechnique*, persuaded by his ideas of renewal of the governing elite.

Notably during the Second Empire but also up to the inter-war period, they were the main players involved in structuring the credit system in France.

The Crédit Lyonnais (CL) was the epitome of a success that was if not collective at least pluralistic since other so-called savings banks such as the *Comptoir d'Escompte* (1848), *Crédit Industriel et Commercial* (1859), the *Société des Dépôts et Comptes Courants* (1863), the *Société Lyonnaise de Dépôts* (1863), the *Société Générale* (1863), and the *Société Marseillaise de Crédit* (1865) can also be added to the list. The CL's early move away from direct investment in industry forced it to become the savings bank *par excellence*, and its subsequent history demonstrates the significance of this decision. From this constraint, it was able to draw its strength – the small unitary margins generated by commercial banking operations required the bank to implement a high-performance organizational structure in which information had to be centralized to enlighten rational decision making and to limit risk. For such everyday banking business, Henri Germain, the founder and chairman of the CL until the turn of the 20th century, would put accounting at the heart of his information system.

The CL's withdrawal from the sector of direct investment went together with the birth of its *Service des Études Financières* (SEF) (the Department of Financial Analysis). On the issue of financial brokering, in which the CL played a leading role, assessing the risk of insolvency² did not yet rely on quantitative and statistical analysis methods such as "credit rating," but instead on financial and accounting analysis tools. In this context, the SEF's main purpose was to draft technical and/or financial studies for numerous departments requesting them, such as Securities Management, Risks, Interbank Relations, Securities Issuance, to enable them to use sector-specific information and accounting data provided by companies to measure company economic viability and to assess the risks the bank was assuming. The SEF also carried out economic monitoring, including macroeconomic studies, sector-specific studies, and data collection. Since it reported directly to general management, its strategic function would always ensure it remained independent from other departments.

²For more in-depth study of the issue of risk assessment at the CL, see Praquin [2003, 2005]. It should be noted that this paper does not consider the use of accounting techniques for the management of CL itself. For a recent study of this, see Pezet and Sponem [2008].

More specifically, this service set up a system of “deconstructing” accounts disclosed by companies with the purpose of restating them. This analysis of financial statements constituted one of the major reasons for this service to exist; the goal was to reduce the risk of asymmetrical information tied to the window-dressing that most companies engaged in at that time in western countries such as Britain [Edwards, 1980], France [Lemarchand, 1992], Germany [Spoerer, 1998], Spain [Bernal Lloréns, 2000], and the U.S. [Dicksee, 1927; Michael, 1996]. This tool for analyzing annual statements relied on an intricate system of tables designed to establish concordance between the earnings disclosed by companies and the cash flows they generated. This cohesive set of tools predated the methods of corporate financial analysis that were to be implemented in France from the end of the 1950s onwards.

This paper therefore pursues two aims. The first is to show, both in general terms and through two case studies, how a profitable financial institution came to implement risk-assessment tools. The second is to highlight the fact that historical research enables us to understand how some accounting and financial concepts, however much they may be perceived today as innovative, were actually envisioned in bygone eras before being forgotten due to the lack of appropriate diffusion.

HISTORY AND DEVELOPMENT OF THE CL

The history of the birth and development of the CL is inextricably tied to the personality of its founder, Henri Germain,³ who was to leave his mark on the bank until retiring from business life. The first 20 years were marked by an uncertainty that weighed heavily on the strategic direction given to the CL. After an unfruitful period of direct investment in companies, Germain took the decision to orientate the bank definitively towards short-cycle activities.

1863-1882: An Uncertain Strategy for Assets: The composition of the first Board of Directors was significant in terms of both the

³Born in 1824, Germain studied law. In 1856, he took on a position as a broker and perfected his knowledge of the business world by working in a Lyon silk-making business owned by the Saint-Simonist Arlès-Dufour. His second marriage was to a Vuitry, the daughter of the former governor of the *Banque de France*, former minister, and president of the State Council. At 40, he founded the CL. Elected as a *député* on several occasions from 1869 onwards, he was prevented three times from becoming a minister by James de Rothschild's veto. He died in 1905.

multiple influences they exerted on the CL at the outset and the ambiguity of the strategy with which Germain wished to endow it. Among the board members were Saint-Simonists, arguing for a new social order to be built on industrial development and wealth sharing, who rubbed shoulders with more conservative bankers and industrialists. What they had in common was that they all belonged to a business class faced with a banking system that they judged to be archaic and unable to satisfy their financing needs. Local bankers offered insufficient financial soundness, and the *Banque de France* declined to part from its traditional role as discount broker and would only underwrite certain securities – government securities, shares, and French railway bonds. Some hoped to obtain easier cash loans while others sought to find ways of underwriting and circulating the bond loans they issued.

From this plethora of expectations was born a mixed bank, similar to the main competitors previously mentioned. Germain's convictions differed according to whether his focus was on assets or liabilities. On the liability side, from its creation onwards, the focus of the CL was invariably to try to attract small investors by offering good rates of interest as the bank sought popularity as a savings bank. In addition, it proposed demand deposits, fixed-term deposits, commercial paper, and interest accounts reserved for banking and business clients. Germain proved to be still more inconsistent with regard to assets. The CL began by becoming involved in industrial investments in the hope of making quick capital gains. This reflected a rationale typical of economic development in the Second Empire when large investments made large profits. The risk tied to the amount of capital invested was associated with the possibility of a yield significantly higher than in current banking operations. However, Germain did not wish to relive the disastrous experience of the Pereire brothers' *Crédit Mobilier*.⁴ He remained prudent and dedicated the majority of assets to discount operations which were less fruitful but much safer owing to the spreading of risk and the short-cycle nature of this activity.

⁴These brothers founded the first French conglomerate. Also Saint-Simonists, they had built their businesses (rail and maritime transport, property, banking, and insurance) by relying on a bank, the *Crédit Mobilier*, that was in charge of issuing and circulating the bonds necessary for financing these investments. Falling out of favor, and unfortunate in a number of property deals, they lost the support of the political powers and went bankrupt.

From 1870 onwards, Germain's turning away from all direct industrial investment forced him to invent another form of banking and to create a model that stood for the soundness and liquidity of its investments. This shift from a mixed bank to what would later be called a savings bank was completed in the aftermath of the stock market crash of 1882.

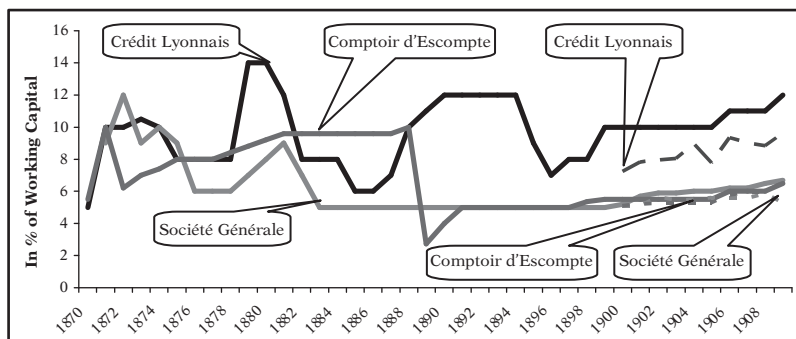
1882-1914: Success in Choosing a Banking Specialization: The progressive disengagement from the industrial sector was a success for the CL. From the end of the 1870s, it became "the leading French publicly-traded bank" [Bouvier, 1961, p. 68] until the end of World War I. While its competitors were still embroiled in industrial "adventures," such as the *Société Générale* with its sulphur, guano, and loans businesses in Sicily and in Peru, or the *Comptoir d'Escompte de Paris'* backing of speculation in copper, Germain's bank took advantage of this period of slower economic growth to strengthen its network in France and abroad. From 110 branches and offices in 1882, it expanded to 257 by 1903. From 1884 onwards, it offered new services to its clientele, such as rental of safe boxes, and by the turn of the century, it had also launched a significant property-building program in Lyon and Paris.

In other words, the choice of specializing in current operations proved to be profitable in the long term. This specialization occurred mainly through the management of accounts, short-term operations (loans, overdrafts, seasonal loans), and banking intermediation (selling shares and bond issues to its clients). However, such an orientation could only be successful at the price of constant vigilance, which specifically meant finding an accounting tool that performed ever better and setting up specialized services such as the *Service des Etudes Financières* (SEF). The latter was responsible for studying the quality of requests for banking intermediation that various companies made to the CL. In order to assess better these proposals, it implemented a system of financial analysis, the history of which is outlined below. The CL's strategy proved to be effective especially when compared to other banks. Its profit margins and dividend payouts were significantly higher than those of its competitors (Figure 1).

The CL's growth ensured regular increases in its profits which rose at the same pace as figures in the main entries of its balance sheet (Figure 2). A comparison of progress in the main liabilities (current accounts in credit, demand deposits) and in assets (commercial portfolios, current accounts in debit) with

FIGURE 1

**Dividend and Profit Rates for the Crédit Lyonnais,
the Société Générale, and the Comptoir d'Escompte
(1870-1909)**



Continuous Line: Dividend Rate — **Dotted Line:** Profit Rate

(Source: Kaufmann, 1914 : 489 ; 492)

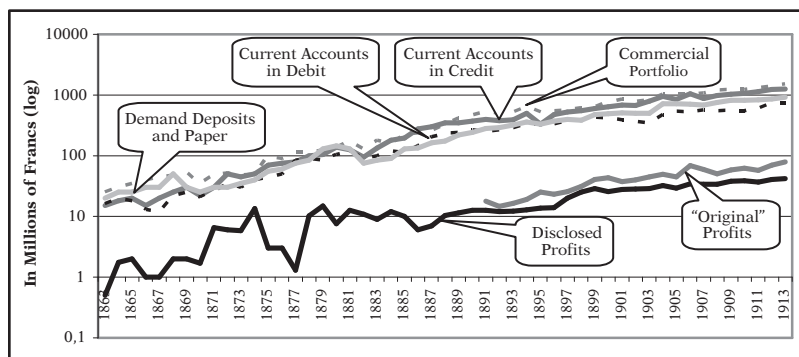
the rise in profits, whether disclosed or “original,”⁵ is fairly telling. The first observation is logical – the progression of assets is in line with liabilities. The second observation proves to be much more interesting in that following the crash of the *Union Générale* in 1882,⁶ profits experienced regular growth, strongly correlating to that of the main entries in the balance sheet.

In other words, the decision to increase its geographic scope in France and abroad enabled the CL to stimulate not

⁵The “original” profits are provided by Bouvier et al. [1965, p. 239]. They are defined in the following way: “the mass of profits is understood over each financial year as an ‘original’ mass including: profits paid out (dividends, directors’ fees), profits in reserve, diverse provisions and amortizations on dubious debtors, insofar as these last two entries are signalled” (p. 219). We can see that in the framework of a semi-logarithmic graph, “instruments *par excellence* for comparing rhythms of variation” [Saly, 1997, p. 107], they present hardly any difference with disclosed profits. Yet, it seemed interesting to show them insofar as they could have provided additional insight given the considerable arithmetic variance that exists with the disclosed net incomes.

⁶The *Union Générale* was established in 1878 to compete specifically with the CL and, more generally, “Jewish” finance. It aimed to attract mainly “Catholic” savings and succeeded in obtaining the support of the French clergy. It experienced rapid growth, often criticized by its detractors. Numerous abuses and accounting manipulations brought it to bankruptcy in 1882. This bankruptcy triggered the first French stock-market crisis and brought about a series of economic and social troubles.

FIGURE 2
The Case of the Crédit Lyonnais: Trends in the Main Entries in the Balance Sheet Compared to Profits Made (1863-1913)



Sources: All the entries except that of the “original” profits come from graphs published by the CL on the occasion of its fiftieth anniversary [*Brochure du cinquantenaire du Crédit Lyonnais: 1863-1913*, archive hc14]. The “original” profits are provided by the work of Bouvier et al. [1965, p. 239]. They are defined in the following way: “The mass of profits is understood over each financial year as an ‘original’ mass including: profits paid out (dividends, directors’ fees), profits in reserve, diverse provisions, and amortizations on dubious debtors, insofar as these last two entries are signalled” [Bouvier et al., 1965, p. 219]. We can see that in the framework of a semi-logarithmic graph, “instruments *par excellence* for comparing rhythms of variation” [Saly, 1997, p. 107], they hardly present any difference with disclosed profits. Yet, it seemed interesting to us to show them insofar as they could have provided additional insight given the considerable arithmetic variance that exists with the disclosed net incomes.

only the flow of savings but also the flow of net incomes. The quasi-indexation of low unitary profits on the growing mass of resources (i.e., liabilities) mechanically generated an equally increased accounting net income.

THE WORK OF THE SEF

In September 1871, Germain came up with the idea of an office, unique in its way and never equaled [Kaufmann, 1914, p. 353]:

The *Comptoir National* also set up, a few years ago, a financial analysis department. The Crédit Lyonnais’ department was used as a model. However, with only limited staff, it cannot be compared, even remotely, with its much larger rival. A body with this centralizing

feature does not exist at the *Société Générale*. It leaves each department to decide what information to acquire and the data that it needs.

Even though the issue of assessing risk was a concern widely shared by the whole banking sector at that time [Bonin, 2000], what is striking here is the importance of the role played by the SEF in the development of the CL [Bigo, 1948; Bouvier, 1961].

The SEF was an independent and autonomous service. Depending on the case, its studies were released in single unified documents that either explicitly or implicitly discriminated between the technical and the financial parts. One of the greatest challenges the SEF encountered was managing to break away from the window-dressing carried out by companies that disclosed their accounts to the CL.

Role and Purpose of the SEF: This service was responsible for collecting and analyzing economic and financial intelligence. In the public arena, the context was favorable since financial data and economic statistics⁷ were developing and communication infrastructures (the telegraph and the railway) could enable their rapid circulation. It was the moment for the CL to create added value by developing its know-how in centralizing, sorting, and organizing disparate data sets in order to draw quality information from them and to be the first to act on “big business opportunities” and to generate thereby “huge profits” [Meeting of the Board of Directors, November 5, 1889, cited by Flandreau, 2003, p. 259; see also Bouvier, 1961, p. 290]. Also, it would later enable the bank to target investments for its large clientele using first-hand intelligence, as stated in the *Brochure du cinquantenaire du Crédit Lyonnais (1863-1913)*: “The SEF is working for both our clientele and for all of the services and branches of the Crédit Lyonnais” [CL Archives, hcl4, p. 48].

The SEF periodically carried out in-depth studies that it sometimes supplemented with reports drafted on more specific points. These studies had several purposes. They gave the CL

⁷In addition to the numerous newspapers born with the Second Empire and affiliated to powerful moneymen (Mirès' *Le journal des chemins de fer*, the Pereire brothers' *Le journal des actionnaires*, *La semaine financière*, which was indirectly tied to the Rothschilds), a more independent press also developed, such as the *Messenger de la Bourse*, the *Journal des économistes*, or, much later in 1873, Leroy-Beaulieu's *L'économiste français*. From the mid-19th century onwards, economic statistics developed in the form of congresses (Berlin in 1863, Budapest in 1878, etc.) or studies, with the notable backing of Napoléon III.

a chance to reduce its risks by knowing the financial quality of both current and prospective clients in greater depth. They also gave it an opportunity to improve the management of its clientele's credit lines by increasing, maintaining, or reducing the outstanding payments yet to be made. But, most importantly, in the framework of the CL's intermediation activities, these studies enabled the bank to guarantee high-quality securities to its clientele of savers and investors. Specifically because of this financial analysis service, the CL was widely recognized as a bank of the highest order and soon won the trust of its peers. It often led banking syndicates and found no difficulty gathering financial partners around the table to float companies on the stock market and sell shares to the public. Companies also benefited from these studies because obtaining intermediation from the CL was for them an additional guarantee that the operation would move ahead.

Germain had always planned for the SEF to be an independent service so that it would not be subject to external pressures with respect to any findings in the studies it would issue. The chairman-founder of the CL understood that it was important to keep apart the functions of analyzing and decision making. The SEF therefore worked on its own or provided analysis at the specific request of other departments in the bank but was never the decision maker. Evidence of how watertight this division was between the SEF's analysis and decision making by the other departments can be found in the archives. Although it is possible to establish the purposes of SEF studies either by studying them directly or by reading other research [Flandreau, 2003], it proved impossible to discover the extent to which the SEF's findings influenced decision making by the other departments or services receiving these studies. However, two factors suggest that they did play a major role. First, Germain laid great emphasis on this service. Second, the periods of the bank's success and its subsequent decline also corresponded to the periods when the SEF was at first considered irreplaceable but subsequently progressively neglected.

Technical Studies: With respect to its banking intermediation activities, for which the SEF was mobilized, the CL mainly dealt with mining and industrial companies that needed to raise considerable funds to finance their investments. Railway companies had no need for financial intermediation since they received a state guarantee in 1840 underwriting the issuance of their shares. This guarantee ensured the public's trust and therefore

they were able to sell their bonds directly to their clientele at ticket offices in train stations.

The purpose of the so-called technical studies was to describe the conditions affecting the supply-chain and business activities of the different entities in a given group. The goal was to place a company in its competitive environment by highlighting historical details relating to the different stages of its development by providing data on the geographical locations of its factories and their accessibility, by assessing the quality of different supply sources, and by analyzing the successive investments undertaken.

The purpose of the section dealing with production was to shed light on the production process as a whole, from the mining of raw materials to the marketing of finished products. The SEF did not lack the elements of comparison as it produced data and statistics on both the company under scrutiny and its competitors. The SEF was in a position to refer to sector-specific information gathered from the annual public reports published by the Ingénieurs des Mines and to compare them with data disclosed, it appears, in a company's accounting of its internal costs. On this point, however, we should be cautious because the precision of certain calculations may lead us to assume that the only possible source was the company itself. Yet, at other times, precise data are missing either because the CL had not received them or the company was unable to provide them. As we will see later, the bank analyzed the accounting for net income using gross operating profit without knowing how it had been reached. These data therefore essentially appear to stem from excellent knowledge of the sector and timely investigations within the company itself as a number of reports about on-site visits testify. These data allow us to suggest that cost accounting and financial accounting were totally decoupled. In the event that precise data were lacking, the auditor would extrapolate from past indicators.

Financial Studies: The financial studies contained a descriptive part drawing together the various elements that formed their basis, the considerable work of restating accounting data that department staff conducted upstream. These financial reports detailed how the main accounting items were established (acquisitions, sell-offs, content), described the accounting methods used (measuring inventories, amortization policy), and assessed the pertinence of dividend payouts by comparing them with the profits generated. The reports concluded with a valuation of

the share price that was calculated, depending on the case, by a measurement (specific to the SEF) of the company's assets, by capitalizing dividends, or by simulating forced bankruptcy.

Yet, the most notable feature during this turn-of-the-century period of transition resided in the considerable work of restating and analyzing accounting data disclosed on a company's balance sheet, income statement, and corresponding reports. By first deconstructing and then reconstructing the financial statements provided by companies, the analysts at the CL sought to forge their own opinion on the "veracity" (the term used at that time) of the net income disclosed by comparing the company's figures with net incomes reached using their own methods.

The dual aim of the SEF was to break away from the uncertainties associated with the disclosed accounts and to implement a homogeneous method of restating accounting data that offered several advantages – standardizing processes for producing restated data, generating economies of scale, ensuring soundness in decision making, minimizing risk, and creating internal technical competencies.

Issues Relating to Disclosed Accounts: The lack of homogeneity in corporate accounting practices constituted the major challenge facing the SEF. This situation arose due to the following phenomenon. In the absence of any accounting standards, the lack of standardization of key concepts, such as those relating to calculated cash flow⁸ or to the recognition of rules defining assets as opposed to expenses, raised difficulties in interpreting the same economic situation. In order to enable translation into accounting terms, this situation led to the use of numerous accounts that worked differently. In other words, assets might be charged indiscriminately either to the balance sheet or the income statement, and depreciations might or might not be recorded according to the ultimate configuration that company boards sought to give to their financial statements.

More specifically for the CL, it was statements of investments (whether assets or expenses) that posed the greatest difficulty for interpretation. The SEF had little information at its disposal that enabled it to know the criteria that a company

⁸This is stretching the current classical distinction between calculated expenses and paid expenses to cover all accounting movements that do not result in a monetary flow, owing to the facts that amortizations, provisions, and reserves fulfil analogous functions and that the accounting distinctions conceptually established today did not exist at that time.

was following in improving, transforming, or acquiring an investment and whether such an investment was an asset or an expense. Echoing this issue was the question of how expenditure on fixed assets was amortized. The methods most often encountered were industrial amortization expenses, depletion of a reserve account created for this purpose, and assets charged to other reserve accounts or to accounts made of matured bonds. The corollary of this was the deduction of depreciation from the fixed-asset account in question.

Nevertheless, by examining reports disclosed with annual statements, CL analysts were able to identify the different types of accounting used by companies to state the fall in value of their investments. Above and beyond the existence of statutory amortization (most commonly either a rate of one fifth or a fixed amount, both recorded as a drop in the gross operating profit), companies turned to other ways of accounting for amortizations that evaded disclosure in the profit-and-loss account. Thus, the *Compagnie des Forges et Acières de la Marine et d'Homécourt* did not hesitate to multiply and blend the different options that were open to it. From 1856 to 1860, it set up a reserve amortization fund that was both charged and depleted at the same time over its financial years. Subsequently, this account remained relatively inactive until the 1880s when once again it began to be depleted. In 1867, it added an insurance fund that, according to CL annotations, did not undergo any transactions other than in 1869 and in 1872. Furthermore, being able to charge bond reimbursements to the profit-and-loss account created de facto supplementary reserves that could be used for future amortizations. This was the case from 1869 to 1887 and then from 1908 to 1919. Reserves could also be merged.

Faced with the impossible task of formulating an exact idea of what fixed-asset and stockholder-equity accounts contained, the SEF developed a statement that, although unable to provide precise information on asset purchases and sales (charged to fixed-asset accounts at sale price), enabled the SEF to know the variations in fixed assets between one financial year and another.

THE SEF METHOD: THE WORK OF RESTATING ACCOUNTS

Until the inter-war period, the diversity of accounting practices made it difficult for a third party to utilize accounts disclosed by companies. The SEF therefore set out very early on to conduct technical and financial studies which, thanks to an accounting and financial method, allowed it to formalize a certain

number of restatements so as to measure better the net incomes of companies with which the CL wished to maintain or develop a business relationship.

To compensate for the lack of reliability in disclosed accounts, the CL set up a coherent system of financial analysis based on two financial concepts, excess working capital and gross operating profit, which hinged on the key concept of “new works” (*travaux neufs*). However, the relevance of this model depended on prior work on restating disclosed accounts using formalized statements with a number of articulations.

A Key Concept: Calculating “New Works”: The CL performed most of its financial brokerage business with industrial companies that were required to reinvest relentlessly in order to remain competitive. These investments, named “new works” by the SEF, weighed heavily on the profitability of these companies which, to improve the financial picture portrayed in their operating statement, cut amortization expenses by transferring them, in all or in part, onto their balance-sheets accounts. The goal of the analysts at the CL was therefore to acquire a reliable and homogeneous performance indicator. The intent was to break away from window-dressing that might alter the impact of “new works” on net income.⁹ Building such an indicator presupposed having already identified and isolated all the accounting items that contribute to making up these “new works.”

“New works” were therefore calculated on the basis of the variation in net fixed assets to which were added all the decreases that the company had experienced during the financial year. These were added in the form of asset sales or amortizations charged to the different items of equity (profits, reserves, capital, amortized bonds). The calculated figure reached constituted the “new works in the financial year” (*travaux neufs de l'exercice*).

The “new works in the financial year” could then either be charged in total to gross operating profit in order to attain, following other restatements, the profits and losses for the period

⁹The SEF auditors did not fail to inform Germain of the impact of new works on the accounting income. In a letter dated March 4, 1902 addressed to the chairman of the CL, Lucien Rolland d'Estape clearly states, with respect to the *Compagnie des Hauts-Fourneaux, Forges et Aciéries de la Marine et des Chemins de Fer*: “I have compared turnover with gross profit, from which overheads have been deducted, but not with the net operating profit, so that the percentage would be free from the accidental variations that arise from the difference, often significant from one year to the next, in the amount of new works” [CL Archive, deef 23828].

according to the SEF method. They could also be used to compare the profits disclosed by the company and the profits calculated using the SEF method.

In other words, analysts at the CL rejected all capitalization of “new works” and treated them as definitive expenses. In this way, they broke away from the accounting dualism (charging to the profit-and-loss account and/or to the balance sheet) that was being exploited by companies. Consequently, they could develop their own accounting for net income (indifferently called profits and losses or total net profits), calculated on the basis of variations in overall cash flows (called excess working capital) which was subsequently compared with the gross operating profit.

Yet, “new works” were not just intermediary amounts; they too were subjected to analysis in the reports. They were generally used to assess the level of investment carried out during a financial year, and their impact was accounted for in the analysis of the amount of profits disclosed.

Financial Concepts – Variation in Excess Working Capital and Gross Operating Profit: Analysts at the CL were interested in knowing their clients’ performance and thereby assessing the profitability of their companies. However, to achieve this end, they had to possess reliable measurement indicators and, better still, by deploying alternative calculation processes, to be able to cross-check their figures by reaching identical net-income results. For these reasons, as already stated, the SEF set out to measure net income using two different concepts – variation in excess working capital and gross operating profit.

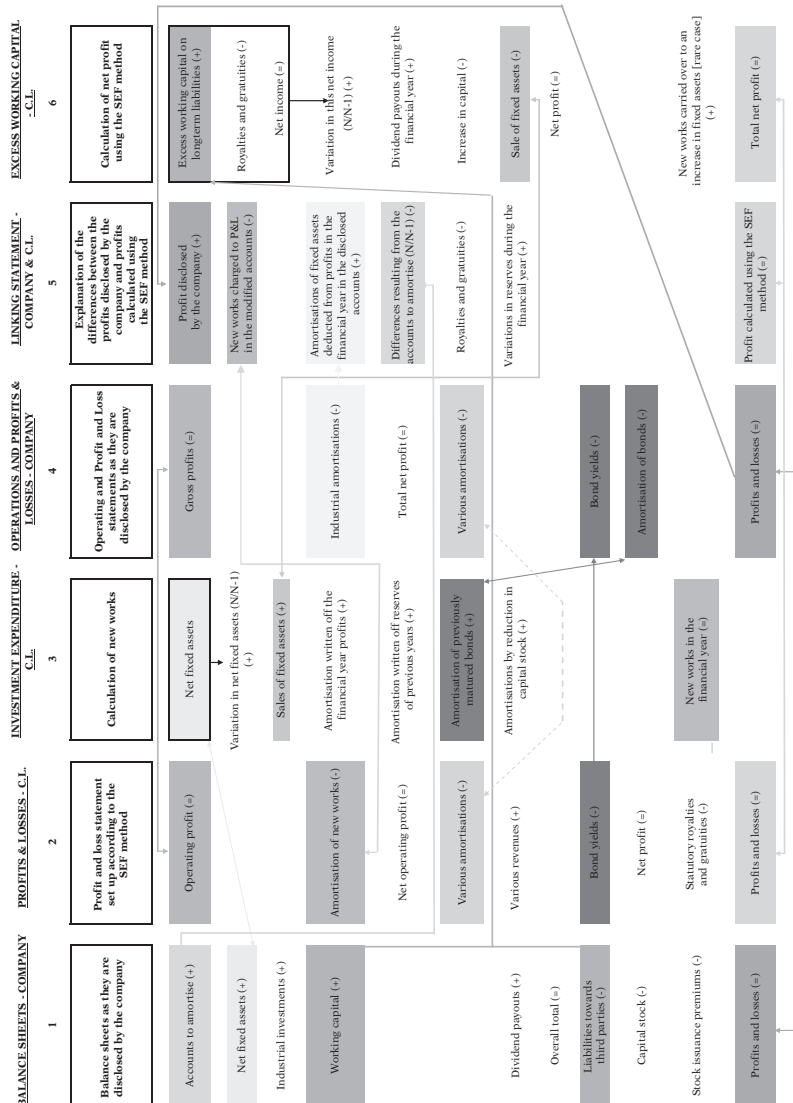
Variation in excess working capital requires a brief detour to look at the underlying notion, namely “working capital,” a term coined during the 19th century but employed in different [Batsch, 1995, p. 15] or even contradictory [Lemarchand, 1993, pp. 366, 569] ways. Within the CL, this expression (still commonly found in the form of “revolving fund” in the 1870s) exclusively denoted current assets that, in addition to inventories, accounts receivable, and cash accounts, also generally included the portfolio of shares and bonds.

An essential sign of the asset liquidity in which the CL was particularly interested, the analysis of working capital constituted a significant part of the comments found in the reports. After each constituent item was broken down in detail and justified as to its makeup and measurement, the report concluded with an assessment of its reliability and liquidity. The underlying idea was to ensure that once fixed assets were covered by sufficient

reserves, the working capital exceeded current liabilities, itself composed of the “floating” debt (i.e., revolving debt) and, less commonly, the “consolidated” debt (i.e., bonds payable). Shorn of inventories, and sometimes of shares and bonds, the excess working capital then became “immediate available assets” (short-term liquidity), as shown in Figure 3.

FIGURE 3

A System of Accounting Restatements



The aim of the diagram is to show that the SEF calculated the performance of a company based on its capacity to generate cash flows. The particularity of the system is that potential net cash flows are calculated on the basis of the fictive liquidation of immediately available assets and liabilities. In a historical context where liquidity was rare and the banking system underdeveloped, the CL, which was mainly a short-term lender, sought to ensure that its clients could face their short-term commitments, even in the most difficult situations (i.e., bankruptcy). Furthermore, fixed assets were considered as being difficult for the CL to mobilize. For this reason, it accorded them little importance and sought to “neutralize” them by ensuring only that they were covered with sufficient reserves. To mark clearly this conceptual difference between the long and the short terms, the diagram distinguishes between these two elements, whereas the CL only focused on the short term. Calculation of this liquidity, performed in successive stages, was accompanied by an assessment of the overall situation which, to foster comparison, was reported in tonnage produced or per business operation.

Measured by its *variation* and after restatement of operations having no impact on the operating statement (sales of fixed assets, increases in capital, and dividend payouts), the excess working capital constitutes an interesting indicator of a company's cash flow in that, with its very mode of calculation free from potential window-dressing carried out on the profit-and-loss account, represents sound liquidity flows capable of confirming the reliability of disclosed profits.

Net income calculated on the basis of the variation in excess working capital is also measured using the gross operating profit disclosed in the company's accounts. However, since the CL did not dispose of any information regarding how it was made up (disclosed profit-and-loss accounts shifted seamlessly from turnover to gross profit), calculations on the basis of gross operating profit had only one purpose. That was to ensure the coherence of the whole financial-analysis system by obtaining a net-income figure identical to the one determined using the variation in excess working capital. The discretionary character of profit-and-loss account disclosure at that time, the limited confidence the CL had in its reliability, and the clear preference for the balance sheet owing to its capacity to measure the company's solvency meant that the former received much less comment in the reports.

Analysis Statements – Possible Articulations and Cross-Checking:

It would appear that this coherent and complete system of financial and accounting analysis emerged with the creation of the SEF in 1871. The first studies based on summary statements date from the early years of that decade. Although the archives consulted do not always provide a totally identical number of statements for each company (either because some were deemed unnecessary or because others have been lost or were left unfinished for lack of information), their composition varied little from one company to the next. This may be seen as a sign that there was a real desire to standardize analysis beyond the particular choices made by each company.

The following statements served as a basis for the SEF's work:

- Presenting the balance sheet, operating statement, and profit-and-loss account, as they were disclosed by a company, but adapted to an internal CL matrix which, notably, allowed working capital to be measured and excess working capital easily calculated.
- Drafting intermediary statements (investment expenditure, calculation of net profit using excess working capital, and a linking statement) ensuring the link between the company's accounts and those assessed by the CL on the one hand and, on the other, profits calculated on excess working capital and operating profits.
- Drafting the revised balance sheet, operating statement, and profit-and-loss account calculated by the SEF in the previous two steps.

This three-stage, account-restatement procedure was based on significant levels of theoretical thinking. In addition to cross-checking consistency, the fundamental relationships that the CL established between net profit and excess working capital should be highlighted. A breakdown of these two concepts, with respect to modern techniques of financial analysis based on the funds statement and developed by the French *Plan Comptable Général* in 1982, illustrates the relevance of this approach (Appendix I).

In other words, the SEF succeeded in reaching a profit figure based solely on cash flows while ensuring that this result could be compared with the figure disclosed by the company using its linking statement. This method enabled the CL to make a clean break from the variety of ways used to account for investments whose impact on the disclosed profit it could not control.

However, it should be noted that although analysts at the CL effectively succeeded in building a coherent system for examining accounts, they were still limited in their ability to comment

on variations arising from one financial year to another without ever putting them into the perspective of a conceptual framework as has been done in this analysis. The concordance they established was aimed more at ensuring the coherence of the system and the reliability of the net profit figure than at constituting a tool for analyzing variations in corporate financing. Furthermore, this net-profit figure, free from the uncertainties tied to the variety of methods used to account for investments, was not developed any further in the commentaries.

In fact, their goal was two-fold. From an organizational viewpoint, it was a question of seeking to break away from the plethora of accounting practices in order to formalize common methods at the CL. From a technical viewpoint, it was a question of isolating the flows of operating liquidity¹⁰ (variation in excess working capital) from the major impact of internally financed investments so that the reliability of the net-profit figure calculated on the basis of balance-sheet items could be verified.

This paper has sought to push this reasoning to its logical conclusion in order to test the relevance of the model and to show that in the final analysis, such theoretical thinking proves to be very close to current tools of analysis such as the funds statement or cash-flow statement.

MEASURING NET INCOMES: THE IMPACT OF RESTATEMENTS

The next step is to measure the impact of restatements carried out by the SEF on disclosed net incomes. The interest of measuring this impact is to ensure that the main cause of variance between earnings disclosed by companies in a business relationship with the CL and the results calculated by the SEF are due to the different ways of stating investments (“new works”). To do this, four types of calculation have been carried out:

- (i) a comparison between the annual levels of profit determined by the SEF and the annual levels of profit disclosed by companies. The aim is to show the impact of the accounting statement relating to “new works” on the level of earnings.
- (ii) the same comparison using a moving average over nine

¹⁰The term “operating” should be understood in its broadest sense; that is, free from the impact of investment expenditure and not compared with other forms of income (e.g., financial or extraordinary) which would make no sense at a time when modern distinctions were completely unformalized.

years.¹¹ The aim is to determine whether the variances smooth out over time and do indeed stem from the accounting statement relating to “new works.”

- (iii) a comparison (SEF vs. company) between the variance in amortizations and the variance in profits in order to ensure that it is indeed the accounting statement including the “new works” that has an impact on the net income disclosed by companies
- (iv) the same comparison using a moving average over nine years

The present analysis was carried out using case studies based on the annual accounts of two companies, one of which, the *Société de Vezin-Aulnoye*, had a precarious financial balance that tended to worsen at the turn of the 20th century. The other, the *Compagnie des Hauts-Fourneaux, des Forges et Acières de la Marine et d'Homécourt*, maintained sustained growth up to the eve of World War I. However, due to a lack of data over time, only the first calculation could be carried out in the case of the *Société de Vezin-Aulnoye*.

With regard to the comparison of annual profits, we can observe that short and stable periods present fewer variances between disclosed profits and those calculated by the CL as testified by the regularity of the figures reached during the years 1884-1890. In contrast, over a short and turbulent period (financial difficulties facing the *Société de Vezin-Aulnoye* or conjunctural growth¹² for the *Compagnie d'Homécourt* over the previous decade), the CL method tended to increase the variances between the figures calculated by the SEF and those disclosed by the company (Figures 4 and 5).

The differences observed were significant. The variance between profit figures calculated by the CL and disclosed profit amounted to 67% for the *Société de Vezin-Aulnoye* from 1889-1890 to 1901-1902, and 306% for the *Compagnie d'Homécourt* over the years 1907-1919. Whereas companies, such as *Vezin-Aulnoye*, could limit industrial amortizations (i.e., those that the

¹¹In order to avoid superimposing the graphs and to facilitate their reading, the moving average is calculated on the basis of half of the average lifespan of investments carried out by the companies.

¹²“Repercussions from the international crisis were only felt at the end of 1907 and the industrial recession was only slight....Europe remained unaffected by the American slowdown of 1910-1911.... Industrial production would exceed, in 1913, the 1908 level by 32%; the increase rose to 58% for the steel industry, 65% for the mechanics industry while production of potash doubled” [Flamant, 1976, pp. 329-331].

FIGURE 4

**Comparison of C.L. Net Profits - Cie des Hauts-Fourneaux...
d'Homécourt Disclosed Net Profits (1856-1919)**

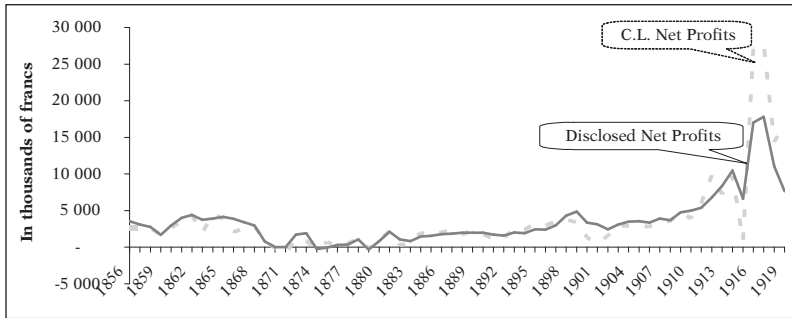
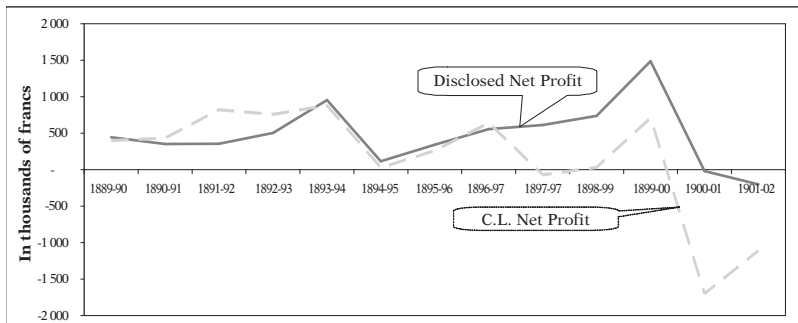


FIGURE 5

**Comparison of C.L. Net Profits - Cie Vezin-Aulnoye
Disclosed Net Profits (1889-90 / 1901-02)**



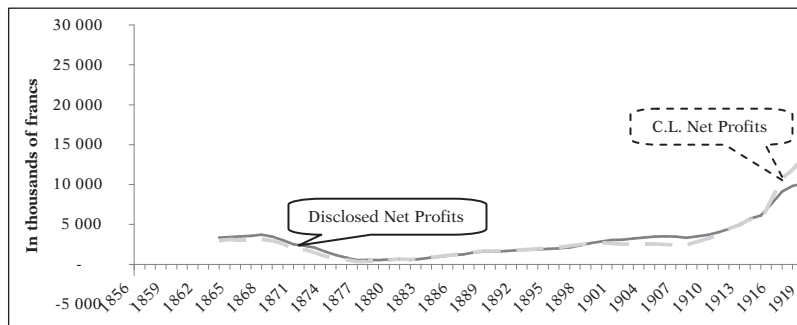
company recorded in its profit-and-loss accounts) to reduce the impact on their bottom line of a conjuncture or unsuccessful management, CLs restatement of “new works” had the effect of erasing the smoothing effect caused by amortizations of the disclosed accounts and of increasing the variances between the two forms of net incomes. Conversely, periods of strong growth, such as that experienced by the *Compagnie d'Homécourt* between 1916 and 1919, were used by the companies to increase their amortization expenses and therefore to reduce their net incomes, with the effect of stimulating the net profit calculated by the SEF. In other words, during stable cycles, disclosed net incomes and the CLs net incomes were similar, whereas in turbulent periods they seemed to diverge significantly.

In this sense, the SEF-implemented statements constituted effective alarm indicators for risk because they enabled the SEF to state the real level of a company's activity based on its cash flow rather than on its disclosed earnings, the object of much manipulation. The CL could then adjust its commitments (short-term operations and financial intermediation) with a better understanding of its clients' financial situations.

Over the longer term, the SEF restatements had a minor impact, and the figures calculated on both sides tended to balance out (Figure 6). The cumulated profits calculated by the CL differ from the figures disclosed by the *Compagnie d'Homécourt* by only 5%, whereas the extreme variances were 0.64% in 1878 and 119% in 1918. Such a mild impact is logical because both the method of amortizing "new works" used in the disclosed accounts and the CL's method of charging them globally had, in the end, an identical effect on profit levels. Moreover, this method offered little of interest to a managerial approach of forecasting risk and preferring liquidity. What mattered most to the CL was the predictability in the short and, in due course, medium term.

FIGURE 6

**Comparison of C.L. Net Profits - Cie des Hauts-Fourneaux...
d'Homécourt Disclosed Net Profits (1856-1919) -
Rolling Average Over 9 Years**



The last interesting element to analyze is the impact of restating "new works" on the net income. To this end, it suffices to compare for each financial year the variance in amortizations with the variance in net profit. Indeed, if the two variances have a similar movement, it means that the main source of divergence between the two forms of net income arises from the restatement (amortizations or "new works") of investments. The

first is calculated by measuring the difference between disclosed amortizations and amortizations calculated by the CL (potential amortizations and “new works”); the second by deducting from the disclosed profits those calculated by the CL.

In the stable short term, variances in amortizations are shown to be close to variances in profits, but the difference rises in periods of instability, regardless of whether they were profitable like in the period 1916-1919 for the *Compagnie d’Homécourt* (Figure 7). Over the longer term, as measured using rolling averages, the variances balance out (Figure 8). Differences in amortizations (6%) are not far at all from those in profits (5%).

FIGURE 7
Comparison of Variance in Amortisations with Variance in Net Profits (C.L. - Cie... d’Homécourt: 1856-1919)

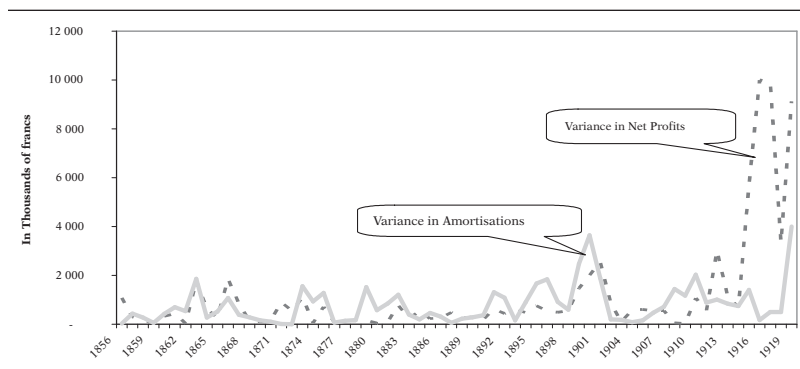
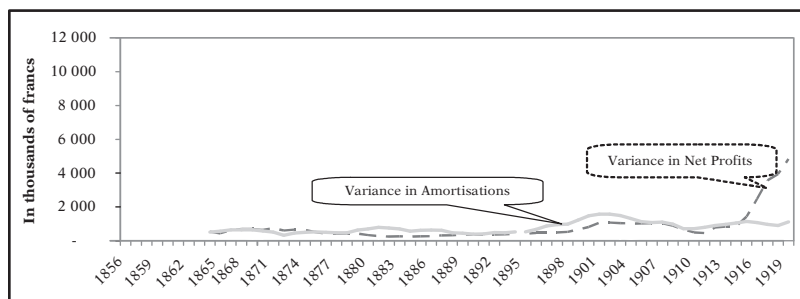


FIGURE 8
Comparison of Variance in Amortisations with Variance in Net Profits (C.L. - Cie... d’Homécourt: 1856-1919) - Rolling Average Over 9 Years



This close correlation confirms that the issue of “new works” constituted the main source of concealment of profit or loss by companies. For the CL, it was therefore important to know the impact of these investments on its clients’ earnings since a low level of cash flow could be an indication of a lower performance and of an increased risk of failure. This type of information gave it a competitive advantage as it could better select its clients, reduce its risks, and improve its financial performance.

DISCUSSION AND CONCLUSIONS

This paper confirms the importance that companies have always given to cash flows to estimate the viability and reality of an economic activity [Lemarchand, 1992]. It also enables us to shed new light on the expectations of a creditor bank. Faced with a plethora of uncontrollable accounting practices, the bank pushed its rationale to its limit, considering any investment as an expense, by building a technical system that enabled the CL to verify the sincerity and the regularity of the accounts submitted for its inspection (cross-checking the net income by two methods). It also satisfied the preference for liquidity for which it had consistently argued. By implementing this type of accounting restatement, the SEF succeeded in achieving the first goal set by the founder of the CL – detecting as effectively as possible the risk of insolvency of any company seeking to build a business relationship with this top-tier bank. This study also shows that the issue of financing constitutes a central pillar of measuring and controlling the real performance of a company and demonstrates how close the CL method was to the modern concept of “free cash flow” (operating cash flow – capital expenditures – dividends paid out).

Reliance on such account analysis fell after the war. We might assume that the development of medium and long-term bank financing and the fall in corporate internal financing from the inter-war period were the causes of this decline. However, this argument does not apply directly. In many countries, funds statements emerged very early on by whatever means companies financed their activities.

In the U.S., the funds statement emerged as early as 1863, taking on numerous forms until 1925 when these converged in the concept of variation in working capital [Rosen and De-Coster, 1969]. This form then developed towards the statement of changes in financial position [APB 19, 1971] and then the cash-flow statement [SFAS 95, 1984]. In France, the first funds

statements appeared at the end of the 1950s taking multiple forms until the *Plan Comptable Général* of 1982 which highlighted the relation between net global working capital (working capital + amortizations and provisions + long-term liabilities – gross investments), working-capital requirements (inventories + creditors – debtors), and cash and cash equivalents [Hoarau, 1995]. On an international level, this change mirrored the one seen in the U.S. where the statement of changes in financial position of 1977 was replaced on January 1, 1994 by the cash-flow statement.

Furthermore, it is interesting to note a recurrence of the same issues among those who instigate such tools [Hoarau, 1995]. In the first phase, they seek to highlight the risk of liquidity. In the second phase, their goal is to account for the set of movements that affect the financial situation by focusing more specifically on the issue of structural financing. In the third phase, they return to the issue of measuring solvency, this time through a more in-depth analysis of cash flows split between operations, investments, and financing.

The tool implemented by the CL and described in this paper arose from the first phase. However, it is interesting to note that its technical construction is close to tools implemented in France in the second phase. Furthermore, the CL may be seen as a long-forgotten forerunner in the French context, whereas this type of tool had already seen relatively widespread use in the U.S.

Yet, at the dawn of the 21st century, it is surprising to hear echoes of concepts confidentially developed within the CL more than a century before: “ ‘We have observed significant divergences between cash flow caused by operations and disclosed net incomes, which sounds the alarm for potential profit manipulation,’ explains the company [Weiss Ratings] that has studied 7,000 companies” [Fay, 2002, p. 3].

The European Commission [1997, p. 8] shares this position:

This additional angle of observation [cash-flow statements] is deemed very useful by most users and preparers, because it is not influenced by accruals and matching and therefore does not involve conventions and estimates. It may also enhance the comparability of the reporting of operating performances by different enterprises, as it eliminates most of the effects of using different account treatments for the same transactions and events. The joint use of cash flow statements, balance sheets and profit and loss accounts also helps

users in better evaluating the changes in net assets of an enterprise and its financial structure (including its liquidity and solvency), as well as its ability to affect the amounts and timing of cash flows in order to adapt to changing circumstances and opportunities. Moreover, this may allow a better assessment of the quality of the profits reported.

However, it should be noted that de-consolidation operations today enable unfavorable movements of cash flow to be concealed. Yet, the first consolidated statements only appeared at the end of the 19th century in the U.S. In France, several scholars commented on consolidation during the inter-war period, but the first practices only became manifest in the 1950s. In the absence of (de)consolidation, the method used by the SEF proved to be very effective for assessing cash-flow movements in the balance sheets it analyzed.

One final question remains – why did the CL method disappear? The most probable motive for the SEF's gradual move away from accounting and financial-restatement tables was the fact that the tax administration stipulated as a precondition for deducting amortizations from taxable income that amortizations be recorded as expenses. This might also explain why other countries have continued to use funds statements when they were not employed in France until the 1950s. From that point forward, the financial interest of paying lower taxes trumped the rationale of concealing “new works.” Blended accounting (charging to reserves, amortizing bonds, recording assets as expenses, etc.) disappeared in favor of a normalization of accounting through fiscal criteria [Praquin, 2006].

Focused squarely on measuring the significant impact of “new works” on economic and financial performance, SEF analysts unfortunately did not recognize the theoretical scope of their analytical framework which exceeded the restrictive limits it had been assigned. Historical research therefore enables us to bring these anonymous precursors of financial analysis out of the shadows and to pay our respects to the contemporary relevance of the concepts they developed.

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APPENDIX I

Measuring Cash Flows: From the CL (1870s) to the French *Plan Comptable Général*, 1982

$$\begin{aligned} \text{C.L.: } \Delta \text{ Ex. W.C.} + [\text{D.P.F.Y.} - \text{I.C.} - \text{S.F.A.} + \text{N.W.}] &= \text{G.O.P.} - [\text{V.A.} - \text{V.I.} + \text{B.Y.}] = \text{T.N.P.} \\ \text{C.T.: } \Delta \text{ WCR} + \Delta \text{ NT} &\quad - \Delta \text{ GNWC} &= \text{CFOA} - \text{V.A.} \\ & \text{(Excluding external} \\ & \text{financing and cash flows} \\ & \text{from operating activities)} \end{aligned}$$

Where: C.L.: Crédit Lyonnais	C.T.: current transposition
Δ Ex. W.C.: Variation in excess working capital.	
D.P.F.Y.: Dividend paid out during the financial year	I.C.: Increase in Capital
S.F.A.: Sale of fixed assets	N.W.: New Works
G.O.P.: Gross operating profit	V.A.: Various amortizations
V.I.: Various inflows	B.Y.: Bond yields
T.N.P.: Total net profit	WCR: Working Capital Requirement
	NT: Net Treasury
GNWC = Global Net Working Capital	
CFOA = Cash flows from operating activities	

Comments:

- Entries in bold type bring out the basic points highlighted by the concepts of the Crédit Lyonnais or by the French *Plan Comptable Général* 1982.
- Insofar as:
 - The current financing statement includes variations in long-term external financing, which was virtually nonexistent during that era due to the preference for internal financing, except in several industrial sectors; the comparison above is totally possible. Also, the Crédit Lyonnais sometimes “relegated” this external financing to the excess working capital; so it was already balanced out.
 - Calculated expenditure and products are virtually nonexistent and cash flows from operating activities and total net profit tend to be confused.
- In France, there is a formula to analyse the financial balance of any company which is:
 - (Inventories + Accounts receivable) – Accounts payable = Working Capital Requirement (WCR).
 - Treasury in assets – Bank overdrafts = Net Treasury (NT).
 - (Equity + Long Term Liabilities) – Fixed Assets = Global Net Working Capital (GNWC)
 Then: $\text{WCR} + \text{NT} = \text{GNWC}$.
- Variations in WCR and in NT are equal to the variation in GNWC; by deducting this same variation from GNWC (excluding external financing), with deduction of cash flows from operating activities, cash flows logically match up to operating activities. The sole purpose of this tautology is to show that the Crédit Lyonnais was handling concepts that were very close to ‘ours’ but with very different outcomes – measurement of liquidity and of the inflowing income and not calculation of a financial balance based on the excess of stable resources (that is liabilities).

Notes on calculations:

Detail of the calculation: the breakdown is carried out using the “calculation of net profits through the SEF method” [Excess Working Capital] ① and the “profit and loss account set up according to the SEF method” ② from which the net accounting *incomes* are equal:

①: $\Delta \text{ Excess Working Capital } (\Delta \text{ Ex. W.C.}) - \text{Statutory royalties and gratuities} + \text{Dividend paid out in the financial year (D.P.F.Y.)} - \text{Increase in the capital (I.C.)} - \text{Sale of fixed assets (S.F.A.)} + \text{New works carried over as an increase in fixed assets (N.W.F.A.)} = \text{Total net profit (T.N.P.)}$

②: $(\text{Gross}) \text{ operating profit (G.O.P.)} - \text{New Works charged to Expenses (N.W.E.)} - \text{Various amortizations (V.A.)} + \text{Various inflows (V.I.)} - \text{Bond yields (B.Y.)} - \text{Statutory royalties and gratuities} = \text{Profits and losses} = \text{Total net profit (T.N.P.)}$

Which enables us to write:

$$\Rightarrow \Delta \text{ Ex. W.C.} + \text{D.P.F.Y.} - \text{I.C.} - \text{S.F.A.} + \text{N.W.F.A.} = \text{G.O.P.} - \text{N.W.E.} + [-\text{V.A.} + \text{V.I.} - \text{B.Y.}]$$

We may also write:

$$\Rightarrow \Delta \text{ Ex. W.C.} + \text{D.P.F.Y.} - \text{I.C.} - \text{S.F.A.} + \text{N.W.F.A.} + \text{N.W.E.} = \text{G.O.P.} + [-\text{V.A.} + \text{V.I.} - \text{B.Y.}]$$

$$\Rightarrow \Delta \text{ Ex. W.C.} + [\text{D.P.F.Y.} - \text{I.C.} - \text{S.F.A.} + \text{N.W.}] = \text{G.O.P.} + [-\text{V.A.} + \text{V.I.} - \text{B.Y.}]$$