Accounting Historians Journal

Volume 14
Issue 1 *Spring 1987*

Article 4

1987

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The Accounting Historians Journal
Vol. 14, No. 1
Spring 1987

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ACCOUNTING FOR INFLATION: HENRY SWEENEY AND THE GERMAN GOLD-MARK MODEL

Abstract: In his book *Stabilized Accounting* of 1936, Henry Sweeney differentiated his indexation model for accounting for inflation from the French and German inflation-accounting models of the 1920s by describing the European methods as "usually quite content to stabilize the paper-money book figures on the basis of merely some gold money." Sweeney's composite characterization of the European thought, however, generalizes broadly and proves technically inexact when applied to the Germans. This study offers an account of the German gold-mark model of accounting for inflation as contained in the works of Walter Mahlberg and Eugen Schmalenbach.

INTRODUCTION

Henry W. Sweeney's *Stabilized Accounting* of 1936 contains the first book-length treatment of inflation accounting to appear in the United States. In that book, Sweeney recommends a price-level-adjustment model for accounting for inflation that adjusts for price-level change by means of a general index. The ideas in the book, however, did not originate with Sweeney. Rather, as Sweeney himself acknowledged [1964, p. xliv], they had their roots in inflation-accounting methods previously developed in Germany and France. Early in the 1920s Sweeney had chosen as a topic for a doctoral dissertation at Columbia University the overall valuation process, a process he found as currently practiced characterized by extreme conservatism. In attempting to infuse logic into contemporary valuation practices, however, he reports finding himself repeatedly frustrated by the effects of fluctuations in the value of the dollar. As a result, he turned to Germany. Hyperinflation had only recently ended in that country, and he hoped to discover a solution to the problem of accounting under conditions of a fluctuating currency in what had been done there. As he set about mastering the German thought, the French, too, began to publish a body of literature on

the subject, and he determined to assimilate that material as well.[1]

Sweeney expressed his admiration for the work of the Europeans on a number of occasions and appears to have especially esteemed the Germans, two of whom — Fritz Schmidt and Walter Mahlberg — he had review *Stabilized Accounting* in early draft form [1964, p. xlv]. Yet Sweeney clearly regarded his own inflation-accounting model a considerable advance over those of both the Germans and the French and took pains to differentiate it from those of his European predecessors. "[T]he foreign method," he wrote in *Stabilized Accounting,*

> was usually quite content to stabilize the paper-money book figures on the basis of merely some gold money (usually the national gold money), despite the fact that the general purchasing power of gold money itself kept fluctuating [1964, pp. 38-39].

In addition, he noted that the Europeans had neither prepared price-level-adjusted income statements nor devised a thorough and systematic way of treating monetary gains and losses.

Sweeney's indictment of the Europeans on the latter two counts is not without justification. His composite characterization of the French and German methodologies as typically based on a gold currency, however, generalizes broadly and proves technically inexact when applied to the Germans. The various French writers did elaborate on a method of "gold-franc accounting," to be sure, according to which the stabilized unit of measure — the "gold franc" — was an expression of the exchange rate between the French paper franc and the American, gold-based dollar. None of the German writers Sweeney reports having read, on the other hand, including Walter Mahlberg, Eugen Schmalenbach, or Fritz Schmidt,[2] advocated restating inflated German marks on the basis of a gold currency. Fritz Schmidt, whose *Organic Balance Sheet in the Framework of the*

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[1]Sweeney recounts the events that led to *Stabilized Accounting* in an essay entitled "Forty Years After: Or Stabilized Accounting Revisited" that appeared in the 1964 reprint edition of the book [pp. xvii-xxxix].

[2]Schmalenbach (1873-1955) was Professor of Economics at the University of Cologne; Schmidt (1882-1950), Professor of Economics at the University of Frankfurt; and Mahlberg (1884-1935), Professor of Economics at the University of Freiburg. Sweeney mentions all three Germans in his 1927 and 1928 articles, in "Forty Years After," and in several footnotes in *Stablizied Accounting* [1964, pp. 39n, 47n, 170n, 174n, and 193n]. A quote from Schmalenbach also provides the epigram on the title page of the book. Schmidt's current value model was distinct from the gold-mark model and is not discussed in this study.

Economy [1921] contains the first comprehensive statement of current value accounting in the literature, favored a form of replacement cost accounting. Eugen Schmalenbach, founder of the dynamic school and originator of the dynamic balance sheet, proposed an indexation model that preceded Sweeney's by a full fourteen years, and Walter Mahlberg espoused not price-level adjustments per the value of a gold currency but per the market price of gold itself. And while an English-language account of the French gold-franc methodology has existed since 1931 [Wasserman] that would appear to corroborate Sweeney's characterization of the European work, Sweeney's reference to "the foreign method" remains many English-speaking accountants' only indication of what the nature of the German inflation-accounting thought of the period might have been.[3]

To be sure, the term "gold-mark accounting" circulated in Germany during the early 1920s much as the term "gold-franc accounting" circulated in France later in the decade. In Germany, however, the term came to signify in particular the restatement of the depreciated German mark to its pre-World-War, 1914 value (when paper marks were redeemable at a fixed rate in gold) by any of several means including indexation. In order to familiarize English-speaking accountants with the nature of the German gold-mark model — the model that apparently most inspired Sweeney — the present study offers an account of the gold-mark methodology as contained in the works of Walter Mahlberg and Eugen Schmalenbach, the two writers most responsible for the course of the model's development.

WALTER MAHLBERG AND PRICE-LEVEL ADJUSTMENTS PER THE PRICE OF GOLD

The Price of Gold as a Measure of Price-Level Change

The year 1921 was an historic one for inflation accounting. Not only did that year witness the first comprehensive statement of current value accounting in the literature, i.e., in Fritz Schmidt's *Organic Balance Sheet,* but it also saw the publication

[3]Sweeney did publish an article [1928] in which he identified Walter Mahlberg's gold-mark model as the German method "of the most practical promise to accountants in the United States" [p. 105]. Sweeney illustrated Mahlberg's treatment of the balance sheet accounts in the article, but the illustration expresses price-level changes in terms of percentages only and does not address the matter of a restatement device. Neither does the article mention Schmalenbach or indexation.

of the first systematic and compreshensive elaborations of price-level-adjustment accounting.[4] The first of these, Walter Mahlberg's *Balance Sheet Technique and Valuation During Periods of Currency Fluctuation,* marked the introduction of gold-mark accounting in Germany. The second, Eugen Schmalenbach's "Currency Stabilization in the Balance Sheet Approach to Income Determination," offered an early example of price-level adjustments on a non-gold-mark basis that, however, Schmalenbach soon modified to conform to gold-mark principles.

Mahlberg's *Balance Sheet Technique* underwent revision in 1922 and 1923 and expanded its definition of gold-mark accounting to accomodate a variety of measuring devices for price-level change including foreign currency exchange rates and indexation. In its originial, orthodox form, however, Mahlberg's gold-mark model called for the restatement of the mark on the basis of the premium contained in the current market price of gold, that is, as compared to the August 1914 price of gold. The various commodities valued by society, Mahlberg contended, enjoyed a fundamental value relationship to gold that endured over time. Thus, while phenomena such as variations in production and consumption, political upheaval, and the uneven progression of general price-level change might temporarily disturb a given good's value relationship to gold (giving rise to specific price-level change), the underlying value relationship necessarily reasserted itself once economic, political, or monetary stability returned. The price of gold, accordingly, represented the most reliable measure of value available, and the current premium on gold, the most sensitive measure of price-level change.

Because it was based on the current price of gold, Mahlberg's originial gold-mark model was never more than a programmatic one. Germany had abolished its gold standard in 1914 and no gold exchange existed in that country in the 1920s. Mahlberg, nevertheless, considered the organization of a national gold exchange requisite to bringing about an end to Germany's postwar inflation and included that measure in an inflation-abatement program he outlined in the first chapter of *Balance Sheet Technique.* The plan called for several steps including (1) a

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[4]According to A. van Seventer [1975, p. 68], Theodore Limperg, the father of Dutch replacement value theory, conceptualized his ideas as early as 1917-1918. Much of Limperg's thought, however, remained in unpublished, lecture-note form until after his death in 1961. Perhaps the earliest call for price-level-adjusted accounts occurs in Livingston Mittleditch's article of 1918 entitled "Should Accounts Reflect the Changing Value of the Dollar?". The model contained in that article is not as comprehensive as those of the Germans.

reduction of the total reparation payments required of Germany by the Treaty of Versailles, (2) a postponement and/or Allied financing of the reparation payments, (3) curtailment of the unrestrained printing of paper money, (4) increased productivity in Germany (to be effected by an end to the various social programs sponsored by the Weimar government as well as by an intensification of effort on the part of the labor force), and (5) the establishment of a national gold exchange whose daily quotations, expressed in terms of a premium, might serve as a basis for stabilized business transactions as well as for stabilized balance sheets.

Like many of his fellow countrymen, Mahlberg attributed the unrestrained printing of paper money to Germany's efforts to comply with the terms of the Treaty of Versailles; hence the first two steps of his program. The call for a national gold exchange, on the other hand, related to the course he believed inflation necessarily followed. People's understanding of inflation, he argued, passed through three phases. In the first, they looked to the goods side of the goods/quantity-of-money relationship and spoke of the high cost of commodities. In the second, they became aware that the change in prices was ongoing and that it somehow related to the quantity of money in circulation. At the same time, they also began to sense that, due to the uneven rate of price-level change, familiar price relationships were changing as well, some items becoming relatively cheaper and others relatively more expensive. A need arose, accordingly, to measure the rate of general price-level change as a point of comparison.

The third phase of inflation occurred only when a country clearly recognized the influence of the money side of the goods/quantity-of-money relationship and allowed the dynamics of that relationship to work themselves out naturally. This meant above all removing all traces of price controls and giving free rein to the economic forces involved. Second, it meant the organization of a national gold exchange. For once a gold exchange became well established and functioned smoothly, the price of gold became the apical expression of the play of forces that determined the price level in a country's economy. And as the most sensitive measure of price-level change in an economy, the price of gold was in a position to play a decisive role in the monetary stabilization process. The consummation of business transactions on the basis of "gold marks," namely, along with the preparation of gold-mark balance sheets, would eliminate the risks associated with price-level fluctuations, encourage business as usual, and discourage monetary speculation.

Mahlberg's Gold-Mark Technique

Mahlberg's gold-mark methodology itself involved a relatively straightforward price-level-adjustment technique. The German accounting system to which it applied, however, differs in several respects from the U. S. system of today and warrants some explanation. First of all, the German system of the 1910s and early 1920s centered on the balance sheet. Income was measured in a profit-and-loss account similar to an income summary, but that account was closed to the capital account with no formal income statement being prepared. Another difference pertains to the inventory account. For rather than establish separate purchases and sales accounts, the Germans posted purchases and sales directly to inventory. Ending inventory was then entered as a credit to the account so that the amount required to balance at period-end represented gross profit on sales. That amount was closed intact to profit-and-loss.

Also unlike the U. S. system, the German system closed the various real accounts to a formal balance sheet account at period-end (ending inventory was debited to the balance sheet account when credited to the inventory account) and reopened them at the beginning of the following period. Ending inventory, accordingly, became the beginning balance in the inventory account when the various balances closed to the balance sheet were returned to their individual ledger accounts. The profit-and-loss account, too, was closed to the balance sheet account so that any profit or loss appeared as the amount required to balance the account. The amount of profit or loss, however, was then combined with capital for a new capital balance and transferred to the capital account when the various real accounts were reopened.

In keeping with the balance sheet orientation of the German system, Mahlberg's restatement procedures applied exclusively to the real accounts and to the "mixed"[5] inventory account. None of the purely nominal accounts was affected. In carrying through his procedures, Mahlberg first restated the ending balance in each monetary account to its corresponding gold-mark value and carried that value to the balance sheet account. He then closed the difference between the restated ending balance and the nonrestated ending balance — the monetary gain or loss — to the profit-and-loss account. In similar fashion, he recorded the ending inventory in terms of gold and allowed the difference between the restated ending inventory and the nonrestated

[5]Mahlberg's terminology, 1923, p. 103n.

ending inventory, a difference he also termed as "monetary gain or loss," to increase or offset the nominal gross profit on sales. He then debited the net "gain" or "loss" on the account to the profit-and-loss account.

In regard to plant and equipment and other nonmonetary assets, Mahlberg determined their gold-mark value upon preparation of the initial gold-mark balance sheet or upon subsequent acquisition of the individual items and closed the difference between their nominal-mark and gold-mark values to the profit-and-loss account at that time. He then simply carried their restated values forward from period to period. Finally, Mahlberg restated transactions that directly affected the capital account as of the date of their occurrence and debited or credited the difference between their restated and nonrestated values to profit-and-loss as a "monetary gain or loss" in that period.

The "monetary gains and losses" Mahlberg recognized on the restatement of the various nonmonetary assets and the capital transactions, of course, are neither monetary in the sense that the term is understood today nor true gains and losses. Rather, they represent restatement differences that Mahlberg designated a loss if closed to the debit side of the profit-and-loss account (dr. profit-and-loss, cr. asset account [reduction to gold marks!]) and a gain if closed to the credit side of the account (dr. capital [reduction to gold marks!], cr. profit-and-loss). Mahlberg himself at one point made the following observation regarding this problem in terminology:

> With respect to plant assets, securities, and capital, it is not a matter of actual gains and losses . . . but of formal accounting "restatements" of values that . . . are known as a matter of principle to be unaffected by price-level changes [1923, p. 105].[6]

Mahlberg's methodology, then, commingled price-level-adjustment differences with operating gains and losses and with true monetary gains and losses in arriving at the final net gain or loss for the period. By closing price-level-adjustment differences to the profit-and-loss account, however, Mahlberg achieved more or less directly the same valuation of the capital account that Schmalenbach achieved by adjoining a monetary stabilization account to the capital account as explained below.

To illustrate Mahlberg's methodology, if the inventory account contains a beginning balance of M100 representing the cost in gold of 100 kg of a good and shows at the end of the ensuing

[6]All translations from the German in this study are the author's.

accounting period (1) the sale of the 100 kg for M200 (dr. accounts receivable, cr. inventory) and (2) the purchase of 20 kg of the same good for the M200 received (dr. inventory, cr. accounts payable) representing a price-level change of 1000%, the M200 ending balance would be restated to 20 marks "gold" (M200/1000% = M20) resulting in a "loss" of M80 as opposed to a paper-mark profit of M100 (sales of M200 less cost of goods sold of M100). The calculation of the M80 loss is shown in T-account form in Figure 1.

FIGURE 1

Gold-Mark Restatement of the Inventory Account

Inventory Account

Beginning balance, 100 kg	100	Sales (dr. accounts receivable)	200
Purchases (cr. accounts payable)	200	Ending balance restated, 20 kg (dr. balance sheet)	20
		Loss (dr. profit-and-loss)	80
	300		300

[Mahlberg, 1923, p. 103.]

Mahlberg also demonstrated a gold-mark method by which the nominal values in the accounts might be preserved if one were reluctant to alter the original paper data. According to this method, Mahlberg introduced restatement accounts that adjoined or offset the various nominal-value accounts and effectively restated them by the amount of any monetary gain or loss (real or quasi) that related to them. If the paper-mark data reflecting the activity in the inventory described above were left intact, for example, the M200 ending inventory would require a M180 valuation entry (dr. inventory restatement, cr. balance sheet) representing the reduction of its paper-mark value to gold (M200/1000% = M20; M200 − M20 = M180). In addition, the M100 paper profit closed to the profit-and-loss account would require an offsetting entry of M180 (dr. profit-and-loss, cr. inventory restatement) to reflect the 80 mark net "loss" Mahlberg would recognize on the account (the M100 gross profit less the M180 restatement difference). The use of a restatement account to achieve the gold-mark results of Figure 1 is shown in Figure 2.

FIGURE 2

Gold-Mark Restatement of the Inventory Account
Using an Inventory Restatement Account

Inventory Account

Beginning balance, 100 kg	100	Sales (dr. accounts receivable)	200
Purchases (cr. accounts payable)	200	Ending balance, 20 kg (dr. balance sheet)	200
Profit (cr. profit-and-loss)	100		
	400		400

Inventory Restatement Account

Cr. balance sheet	180	Dr. profit-and-loss	180

[Mahlberg, 1923, p. 108.]

Further, if during the following year the inventory account showed sales of M300 representing the turnover of the 20 kg of inventory and a purchase of 15 kg for the M300 received (representing an additional 1000% price-level change), while the direct restatement method would bring forward the prior year's ending balance in gold and restate the current year's ending balance directly, the restatement-account method again would leave the paper-mark data intact and only adjust the inventory restatement account. Thus, given the M5 "loss" on the inventory account shown in Figure 3, the inventory restatement account would require an adjustment of M105:

Ending inventory in paper marks	M300
Less ending inventory in gold marks (M300/2000% = M15)	15
Balance required in restatement account	285
Less balance brought forward	180
Required adjustment (dr. profit-and-loss, cr. inventory restatement)	M105

FIGURE 3

Restatement of the Inventory Account
with Gold-Mark Balance Carried Forward

Inventory Account

Beginning balance, 20 kg	20	Sales (dr. accounts receivables	300
Purchases (cr. accounts payable)	300	Ending balance restated, 15 kg (dr. balance sheet)	15
		Loss (dr. profit-and-loss	5
	320		320

[Mahlberg, 1923, p. 112.]

The M105 adjustment offsets the M100 gross profit on sales (sales of M300 less cost of goods sold of M200) in the profit-and-loss account to leave the M5 net loss, while the adjusted balance in the inventory restatement account effectively restates the ending inventory itself to its M15 gold-mark equivalent (M300 ending inventory less the M285 restatement balance). The inventory and inventory restatement accounts as they would appear after the adjustment are shown in Figure 4.

FIGURE 4

Restatement of the Inventory Account
by Adjusting the Inventory Restatement Account

Inventory Account

Beginning balance, 20 kg	200	Sales (dr. accounts receivable)	300
Purchases (cr. accounts payable)	300	Ending balance, 15 kg (dr. balance sheet)	300
Profit (cr. profit-and-loss	100		
	600		600

Inventory Restatement Account			
Cr. balance sheet	285	Beginning balance	180
		Dr. profit-and-loss	105
	285		285

[Mahlberg, 1923, p. 112.]

One problem with the basic gold-mark method that Mahlberg himself recognized lay in the fact that it distorted the gains and losses actually realized or incurred on the monetary accounts and on the inventory account. This was true, he explained, because the individual postings to those accounts were not restated on a current basis but summarized in paper at period-end and combined as paper with ending-balance gold marks. The distortions offset one another when the accounts were transferred to the balance sheet account, he contended, and resulted in a fairly accurate representation of enterprise capital. But on an account-by-account basis, results were skewed in one direction or the other depending on the direction of price-level change, making it difficult for the owner or manager of the business to identify particular problem areas.

One solution to this problem short of costly current restatement procedures was, as Mahlberg envisioned it, periodic approximation of current restatement percentages. If the value of a gold mark were 100% on 1 January, for example, and its average value for each quarter thereafter changed 250%, 500%, 750%, and 1000%, respectively, the restatement percentage for each quarter would be 100%/250% = 40%, 100%/500% = 20%, 100%/750% = 13.33%, and 100%/1000% = 10%, respectively. Using these percentages, the restatement of the inventory account that appears in Figure 5 would appear as in Figure 6. The difference proves to be a refinement in accuracy of 420 marks (M496 − M76 = M420).

FIGURE 5

Gold-Mark Restatement of Inventory Account
Showing Quarterly Activity

Inventory account

Beginning balance	100	Sales, 1. quarter	300
Purchases, 1. quarter	250	Sales, 2. quarter	600
Purchases, 2. quarter	500	Sales, 3. quarter	900
Purchases, 3. quarter	750	Sales, 4. quarter	1,200
Purchases, 4. quarter	1,000	Ending balance in gold marks (960/10),	
Profit (cr. profit-and-loss)	496	dr. balance sheet	96
	3,096		3,096

[Mahlberg, 1923, p. 146 (adapted).]

FIGURE 6

Restatement of Inventory Account Using Quarterly Restatement Percentages to Approximate the Results of Current Restatement of Postings

Inventory Account

	Paper/ Gold	%	Gold	Gold	%	Paper/ Gold	
Beg. bal.	100	—	100	—	—	—	
1. qtr.	250	40	100	120	40	300	1. qtr.
2. qtr.	500	20	100	120	20	600	2. qtr.
3. qtr.	750	13⅓	100	120	13⅓	900	3. qtr.
4. qtr.	1,000	10	100	120	10	1,200	4. qtr.
							Ending bal. in gold (dr.
				96	⟶	96	bal. sheet)
Gross profit in gold (cr. profit-and-loss)	76	⟵	76				
Cr. monetary stabilization	420						
	3,096		576	576		3,096	

Note: Mahlberg closes the monetary stabilization account he establishes here for refinement purposes to the profit-and-loss account, making the total closed to profit-and-loss (M76 + M420 = M496) — and thus the valuation of the capital account — the same as in Figure 5.

[Mahlberg, 1923, p. 147.]

The great shortcoming of Mahlberg's orthodox gold-mark model, however, was the fact that no gold exchange existed in Germany on the basis of whose quotations paper marks might be restated. And while Mahlberg continued to call for the establishment of a national gold exchange in the revised editions of *Balance Sheet Technique,* others soon adapted his technique for use with an index.

EUGEN SCHMALENBACH AND GOLD-MARK ACCOUNTING VIA INDEXATION

Schmalenbach's 1921 Price-Level-Adjustment Model

Only shortly after Mahlberg's *Balance Sheet Technique* had made its appearance in 1921, Eugen Schmalenbach, the most prominent accounting theorist in Germany at the time and Mahlberg's former teacher at Cologne, published his "Currency Stabilization" article.[7] The model in that article called for price-level adjustments, too, but unlike Mahlberg, Schmalenbach did not initially champion any particular measuring device. Rather, he noted several possibilities including foreign currency exchange rates, the price of gold, and various indexes. He also noted that several possibilities existed as to technique. One could choose the value of the mark as of a given date in the past and restate subsequent values in terms of that value or one could restate all values in terms of the value of the mark at the end of the current period.

Schmalenbach opted for the latter technique in "Currency Stabilization." It was true, he noted, that restatement in terms of the value of the mark at the end of the period did not result in comparable figures for successive years without additional computations. On the other hand, the technique was "simple and clear" and, since it restated all values in terms of the prevailing value of money at the time of restatment, "facilitated understanding" [1921, p. 402].[8]

Perhaps because he did not advocate a particular measuring device in "Currency Stabilization," Schmalenbach, for purposes

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[7]The fact that *Balance Sheet Technique* appeared before "Currency Stabilization" is evidenced by a footnote acknowledgment of Mahlberg's book on the first page of the article [Schmalenbach, 1921, p. 104].

[8]Sweeney, whose price-level-adjustment model restated the dollar in terms of period-end values, echoed Schmalenbach's argument: "[C]omparative stabilized statements are usually more intelligible when expressed in the general price level of the later date. For that price level will always be closer in point of time to the actual general price level existing at the moment when the figures are compared" [p. 38].

of illustration, simply assumed a price-level increase of 250% during the course of one accounting period. He then multiplied the beginning balance in each account of a hypothetical manufacturing firm by the 250% and entered the difference between the restated and nonrestated values as a debit or credit to the account according to the account's nature as an asset or liability. At the same time, he carried an offsetting debit or credit to an account he termed a monetary stabilization account. This account adjoined the capital account and served to restate it indirectly by the amount of the summarized restatement differences.

In the case of nonmonetary assets, the full restated value (net of restated depreciation if a depreciable asset) was then closed to the balance sheet account in the closing process. In the case of monetary items, on the other hand, the nonrestated ending balance was closed to the balance sheet so that an additional entry in the amount of the restatement difference was required to completely close the account. That entry was made to the profit-and-loss account as a monetary gain or loss. Similarly, the ending balance in the inventory account was closed to the balance sheet account at its nominal value while the restatement difference that arose from restating the beginning balance offset the nominal gross profit on sales. Only the residual gross profit was carried to profit-and-loss. Schmalenbach's restatement of the inventory account as in "Currency Stabilization" is shown in Figure 7.

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FIGURE 7

Price-Level Adjustment of the Inventory Account as in "Currency Stabilization"

Inventory Account

Jan. 1 cr. balance sheet	240,000	Dr. accounts receivable	1,500,000
Cr. accounts payable	880,000	Dr. cash	70,000
Cr. cash	505,000	Dr. accounts payable	10,000
Cr. accounts receivable	15,000	Dec. 31 dr. balance sheet	440,000
Dec. 31 Dr. price-level-adjustment account*	360,000		
Dec. 31 cr. profit-and-loss	20,000		
	2,020,000		2,020,000

*Assumed price-level change of 2.5:1:

M240,000	M600,000
× 2.5	− 240,000
M600,000	M360,000

Nominal credit to profit and loss would be M380,000.

(Schmalenbach, 1921, p. 405.)

The profit-and-loss account, too, was closed to the balance sheet account where it served to balance that account as the German system required. Since Schmalenbach's illustration involved a corporation rather than a single proprietorship, however, Schmalenbach did not close profit-and-loss to capital as Mahlberg had but carried the amount forward in the manner of retained earnings. The capital account itself remained at its nominal value, which, as Schmalenbach emphasized, was required in corporate balance sheets by German law.

Like Mahlberg, Schmalenbach also noted that the restated results in the individual accounts were no more than approximations since only beginning balances were restated. But, Schmalenbach argued, what was important — and this was in accord with the dynamic theory — was the impact of restatement

on profit-and-loss rather than on the balance sheet and "[t]he transformation that a corrected profit-and-loss account evidences would not turn out very different if restatement were exact" [1921, pp. 403-404]. Besides, he added, "once people became accustomed to corrections for general price-level change, the restatement procedure could easily be refined" [1921, p. 411].

Schmalenbach and Gold-Mark Accounting

In 1922, within a year of "Currency Stabilization," Schmalenbach published a second writing on inflation accounting that more closely conformed to Mahlberg's methodology and that established a close relationship between gold-mark accounting and indexation for the remaining months of the inflation. Entitled *Gold-Mark Accounting*, the monograph represented the official position of a conference on balance sheet reform that took place in Frankfurt in November 1921. According to Schmalenbach's own account [1922, pp. 1-3], the conference was called within the private sector after hearings on the matter by the Reich Economic Advisory Council had come to a standstill in late 1920. The attendees, who included representatives from German industry, members of various German Chambers of Commerce, Reich officials, and various German academicians, heard Schmalenbach, Mahlberg, and Schmidt all speak in expert capacity and, on Schmalenbach's motion, named a committee to enunciate an official conference position. Chaired by Schmalenbach, the committee membership also included Mahlberg and Schmidt. It was Mahlberg, however, whose voice prevailed: the committee elected to endorse Mahlberg's method of restating accounting values in terms of their pre-war gold-mark value, albeit by the more practicable means of indexation. The task of drafting the committee's report fell ex officio to Schmalenbach, and so pleased was Mahlberg with the outcome of Schmalenbach's efforts that he incorporated the text of his proposed statute into the third edition of *Balance Sheet Technique* [1923, pp. 195-198].

The provisions of Schmalenbach's proposal included guidelines for the preparation of both an original gold-mark balance sheet and for successive year-end gold-mark balance sheets. With respect to an original gold-mark balance sheet, all nonmonetary values antedating 1 January 1918 were to remain at historical cost. Although not insignificant, Schmalenbach argued, war-time inflation proved immaterial when compared to that of the postwar years, and ignoring pre-1918 price-level changes greatly simplified matters. All post-1917 acquisitions,

retirements, and depreciation relating to the nonmonetary accounts, on the other hand, were to be deflated to their corresponding 1 July 1914 values by dividing their nominal-mark amounts by the average index for the year of their occurrence (assuming a mid-1914 index value of 100). Any nonmonetary items acquired in the year of the original gold-mark balance sheet or revalued to their current value in that year were to be restated using either (1) the year-end index value or (2) the index value for the month of their acquisition or revaluation. Monetary items were to be restated using the year-end index value.

After restatement of the balance sheet was complete, if for any reason a debit were required to balance, single proprietorships were to reduce capital accordingly. Partnerships, too, were to reduce capital provided none of the partners objected. Should any partner object, the partnership was to establish a monetary stabilization account equal to the deficit. Corporations, who by law could not restate capital, were to close the debit to any existing reserves among the equity accounts first and establish a monetary stabilization account only if the reserves did not fully extinguish the deficit.

Acquisitions and retirements of nonmonetary items in succeeding years were to be restated using the year-end index value or the index value for the month of acquisition or retirement in a manner consistent with treatment in the original gold-mark balance sheet. Monetary items were to be restated using the index value on the balance sheet date, while depreciation was to be calculated only after restatement of the depreciable asset. At least one-twentieth of any gold-mark profit was to be applied annually to any balance in the monetary stabilization account until that balance was reduced to zero (dr. profit-and-loss, cr. monetary stabilization). With regard to daily business transactions during a year, restatement was to occur in summary form using the average index value for each month. Annual or monthly restatement was to be applied consistently from year to year and was to be in harmony with the method of restating acquisitions and retirements. Dividends were to be paid from gold-mark profits but reconverted to their paper equivalent before actural distribution.

Concerning the use of indexation for restatement purposes, while Schmalenbach duly noted the immediate feasibility of an index, he also argued in favor of indexation on theoretical grounds. Foreign currency exchange rates, he pointed out, were subject to the caprice of monetary speculation and thus tended to exhibit much sharper fluctuations than those of general price-

level change. As a result, if several different companies with different fiscal year-ends were to employ the same foreign currency exchange rate for balance sheet restatement purposes during the same calendar year, differences among the companies might well be exaggerated if not distorted. And even if a gold exchange existed in Germany, the value of gold — Mahlberg's contention to the contrary — would not prove stable. Indeed, the value of gold had fluctuated considerably in the decade before the war as new reserves were discovered in the Transvaal and new technologies were devised to extract those reserves. The war, in turn, had only served to intensify those fluctuations as many countries abolished their gold standards. Perhaps a return to the gold standard was in the offing and would bring about an end to inflation. The value of gold as a good in itself, however, would never cease to fluctuate, and thus its price would never serve price-level-adjusted accounting as well as an index. For an index represented the average price of a number of goods and "neutralize[d] the fluctuations of the individual goods without diminishing their collective effect" [1922, p. 38]. Indexation, accordingly, constituted the most stable measuring device as yet devised for price-level-adjustment purposes.

As to the most appropriate index for gold-mark accounting, Schmalenbach reported in his 1922 monograph that the general preference among his colleagues was for a wholesale index rather than for a consumer index, although he "[did] not share this opinion unqualifiedly" [p. 38]. He did not, however, choose to elaborate on his doubts in *Gold-Mark Accounting,*[9] but turned his attention immediately to a discussion of the two wholesale indexes that existed in Germany at the time. Of these two, one was prepared by the *Frankfurter Zeitung* and one by the Reich Bureau of Statistics. In its favor, he noted, the Frankfurt index

[9]Schmalenbach explained his equivocation here in *Dynamic Accounting.* A consumer index was theoretically preferable to a wholesale index for price-level-adjustment purposes, he explanined, because of its emphasis on consumer goods, the prices of which more accurately expressed the current price level than, for example, the prices of raw materials. The consumer indexes currently available in Germany, however, tended to restrict very narrowly the goods included. As a result, they were in fact not representative of the general price level [1925, p. 202]. Sweeney also found a consumer index theoretically preferable to other types of indexes since "accounting data should ideally be measured with reference to the progress made in obtaining either more consumption goods or greater power over them" [1964, p. 4]. Only because no consumer index prepared in the United States at the time was comprehensive enough for price-level-adjustment purposes did Sweeney, like Schmalenbach, settle for a surrogate, in Sweeney's case the general index.

(1) contained manufactured products as well as raw materials, (2) was calculated as of a particular monthly date, and (3) was published on a timely basis. The day of its calculation, however, was not month-end but the first Saturday of the month and its base year was not 1914 but 1920. In addition, it was a private index and thus not appropriate for statutory regulation. The Reich index, whose base year was 1913, on the other hand, based its calculations entirely on the prices of raw materials and did not appear in the general press. The ideal wholesale index, Schmalenbach maintained, would (1) include manufactured products, (2) be calculated as of the last day of the month, (3) specify 31 July 1914 as its base-year date, and (4) be a government-sponsored index that appeared regularly in the private press.

To illustrate the gold-mark methodology using an index, Schmalenbach, in *Gold-Mark Accounting*, approximated independently index values for the years 1918-1921 with 1914 as the base year and restated the accounts in a 31 December 1921 balance sheet. In that illustration, Schmalenbach summarized the company's daily inventory-account transactions for the entire year and restated them using the average index value for the year. Schmalenbach subsequently expanded and refined his illustration of gold-mark accounting via indexation for inclusion in the third edition of *Dynamic Accounting* [1925], where he restated a 31 December 1922 balance sheet using the Reich Bureau of Statistics index. Also in this illustration, Schmalenbach summarized the company's daily transactions on a monthly basis and restated them using the average index value for each month. The inventory account as restated in the more elaborate illustration is contained in Figure 8.

FIGURE 8

Price-Level Adjustment of the Inventory Account as in *Dynamic Accounting* (Restatement of 1922 Values to 1 January 1913 Using the Reich Wholesale Index)

Inventory Account (Nominal Values)

Jan. 1 cr. balance sheet	1,725,500		
Jan. cr. accounts payable, etc.	1,070,286	Jan. dr. accounts receivable, etc.	1,476,908
Feb.	1,205,260	Feb.	1,422,577
March	1,486,955	March	1,318,641
April	1,482,206	April	2,672,146
May	1,506,852	May	2,078,908
June	2,281,980	June	2,431,978
July	2,031,527	July	2,319,101
Aug.	4,046,286	Aug.	4,676,877
Sept.	7,891,242	Sept.	11,036,562
Oct.	16,851,536	Oct.	18,532,539
Nov.	34,286,015	Nov.	41,611,461
Dec.	38,980,208	Dec.	52,294,798
Dec. 31 cr. profit-and-loss	58,611,033	Dec. 31 dr. balance sheet	31,584,390
	173,456,886		173,456,886

Note: Both the beginning balance and the ending balance contain secret reserves in Schmalenbach's example, the beginning balance of 50% and the ending balance of 70%. Thus, the actual nominal values are M3,451,000 and M105,281,300, respectively. Schmalenbach eliminates the secret reserves for restatement purposes.

Reich Wholesale Index

	Monthly averages	Reciprocal Values × 100
Jan.	3,665	.02729
Feb.	4,103	.02437
March	5,433	.01841
April	6,355	.01574
May	6,458	.01548
June	7,030	.01422
July	10,059	.009941
Aug.	19,202	.005208
Sept.	28,698	.003485
Oct.	56,601	.001767
Nov.	115,100	.0008688
Dec.	147,500	.0006780

Monthly Summaries Restated

	Debits	Credits
Jan.	29,208	40,305
Feb.	29,372	34,668
March	27,374	24,276
April	23,330	42,061
May	23,326	32,181
June	32,450	34,583
July	20,195	23,054
Aug.	21,073	24,358
Sept.	27,501	38,462
Oct.	29,777	32,747
Nov.	29,788	36,152
Dec.	26,429	35,456
Totals	319,823	398,303

Beginning and Ending Balances Restated

Reich Wholesale Index, 1 October 1921: 2,263.5
Reciprocal Value × 100: .0441793
Beginning Balance Restated (M3, 450,000 × .0441793): M152,419

Reich Wholesale Index, 1 October 1922: 42,649.5
Reciprocal Value × 100: .00234469
Ending Balance Restated (M105,281,300 × .00234469): M246,852

Note: Schmalenbach derives his index for 1 October 1922 from the average indexes for September and October of that year as cited above (28,698 + 56,601 = 85,299; 85,299/2 = 42,649.5).

Inventory Account (Restated)

Jan. 1 cr. balance sheet	152,419		
1922 activity	319,823	1922 activity	398,303
Dec. 31 cr. profit-and-loss	172,913	Dec. 31 dr. balance sheet	246,852
	645,155		645,155

[Schmalenbach, 1925, pp. 214, 223-225, and 227.]

In addition to illustrating gold-mark accounting using the Reich Bureau of Statistics index in *Dynamic Accounting*, Schmalenbach also demonstrated in abbreviated form gold-mark accounting using a foreign currency exchange rate, specifically the guilder exchange rate. With respect to the latter illustration, Schmalenbach restated the 31 December 1922 mark on the basis of an index derived from the pre-war parity of the two

currencies rather than on the basis of the guilder itself. Thus, what gold-mark accounting had come to signify was restatement of the German balance sheet, including the profit-and-loss account, to a pre-World War I price level rather than specifically on the basis of gold, or, as Sweeney would have it, on the basis of some gold money per se. Schmalenbach indicated as much himself in a discussion of the concept of a constant mark:

> When we restate a value expressed in money on the basis of a wholesale index, our stable, constant point is the [base-year] price level. . . . In the case of the wholesale index prepared by the Reich Bureau of Statistics [that point] is the price level of 1913. Hence we have the concept of the "gold mark of 1913" or the German "index mark." The expressions are synonomous. [Further, i]f one uses a foreign exchange rate rather than a wholesale index . . . , the custom in Germany is to do so on the basis of pre-war parity and not on the basis of the foreign currency unit itself. [1925, p. 209.].

CONCLUSION

In the second and third editions of *Balance Sheet Technique,* both of which appeared after the Frankfurt conference of 1921, Mahlberg acknowledged the amenability of his gold-mark method to use with either indexation or foreign currency exchange rates. Yet he never abandoned his position regarding the theoretical superiority of the premium on gold for balance sheet restatement purposes. The use of indexes and exchange rates, he contended, merely evidenced the second phase of inflation in which a nation groped for a serviceable measuring device as a point of comparison for changing value relationships.

The value of a currency, Mahlberg argued, was not something inherent in the currency itself but resulted from the dynamics of the goods/quantity-of-money relationship. Thus, during periods of inflation, as newly printed quantities of money continually redefined the relationship, the value of money was developing; and any measure, including indexes, that was not a market-based quotation, necessarily failed to reflect the value of a currency in flux. On the other hand, since the value of a currency in flux was developing and elusive, the foreign currency exchange operated as it were without reference point, the various foreign currency exchange rates vacillating about the actual but unknown value of the depreciating currency. Foreign exchange rates, too, then, failed to reflect the value of a fluctuating currency with any precision.

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