

Coldwater Creek

Coldwater Creek, located in Idaho, operates a direct-mail catalog business. Items marketed through these catalogs include women's and men's apparel, jewelry, and household items. The beginning and ending balance sheets and income statement (in thousands) for fiscal year 1997 are as follows.

Balance Sheet	2-28-98	3-10-97
CURRENT ASSETS		
Cash	\$331	\$9,095
Receivables	4,019	2,342
Inventories	53,051	25,279
Prepaid expenses	2,729	456
Prepaid catalog costs	2,794	1,375
TOTAL CURRENT ASSETS	62,924	38,547
Deferred catalog costs	7,020	3,347
Property and equipment	26,661	20,080
Executive loans	1,620	--
TOTAL ASSETS	\$98,225	\$61,974
CURRENT LIABILITIES		
Revolving line of credit	10,264	--
Accounts payable	27,275	18,061
Accrued liabilities	10,517	5,969
Income taxes payable	--	451
Deferred income taxes	919	76
TOTAL CURRENT LIABILITIES	\$48,975	\$24,557
Deferred income taxes	375	230
TOTAL LIABILITIES	\$49,350	\$24,787

STOCKHOLDERS' EQUITY		
Preferred Stock	--	--
Common Stock	101	101
Additional Paid-in capital	38,748	38,748
Retained earnings	10,026	(1,662)
TOTAL STOCKHOLDERS' EQUITY	\$48,875	\$37,187
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	\$98,225	\$61,974

Income Statement	
Net Sales	\$246,697
Cost of sales	120,126
GROSS PROFIT	126,571
SG&A	107,083
INCOME FROM OPERATIONS	\$19,488
Interest, net, and other	57
INCOME BEFORE TAX	\$19,545
Provision for income taxes	7,857
NET INCOME	\$11,688

Directed Graph (Balance Sheet and Income Statement only)

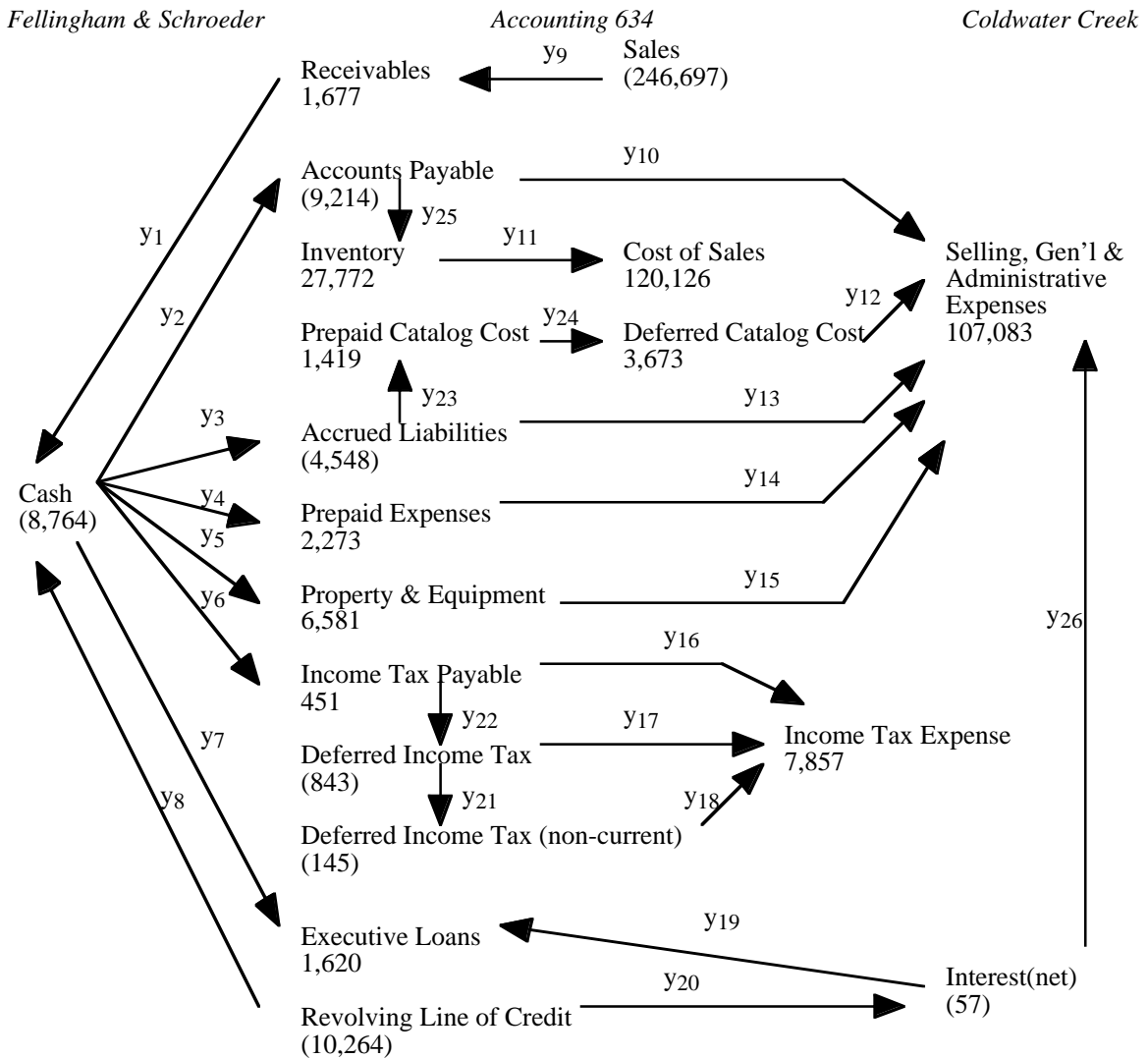
The directed graph representation is presented at the end of this section. Most of the transactions are familiar and we have seen them in previous examples. Others, however, are a little bit specific to Coldwater. What follows is a brief discussion of some of the latter; the journal entry numbers are keyed to the forthcoming directed graph.

An important part of Coldwater's business is the preparation and mailing of catalogs. The costs of preparation are accumulated in a current asset account called prepaid catalog costs (like an inventory account). When the catalogs are mailed, a corresponding amount is moved from prepaid catalog costs to deferred catalog costs, another asset account which is less like inventory, since the catalogs are no longer in house. But Coldwater figures they are still assets as people may submit orders from them. After a certain amount of time (I think thirty days), Coldwater figures the assets have lost their value and the catalogs are written off to selling, general, and administrative expenses.

y_{24} : deferred catalog cost Prepaid catalog cost	y_{12} : SG&A deferred cat. cost
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Coldwater makes loans to executives at less than the market rate of interest. The reduction in interest cost is considered a part of compensation and is charged to SG&A.

y_{26} : SG&A Interest	
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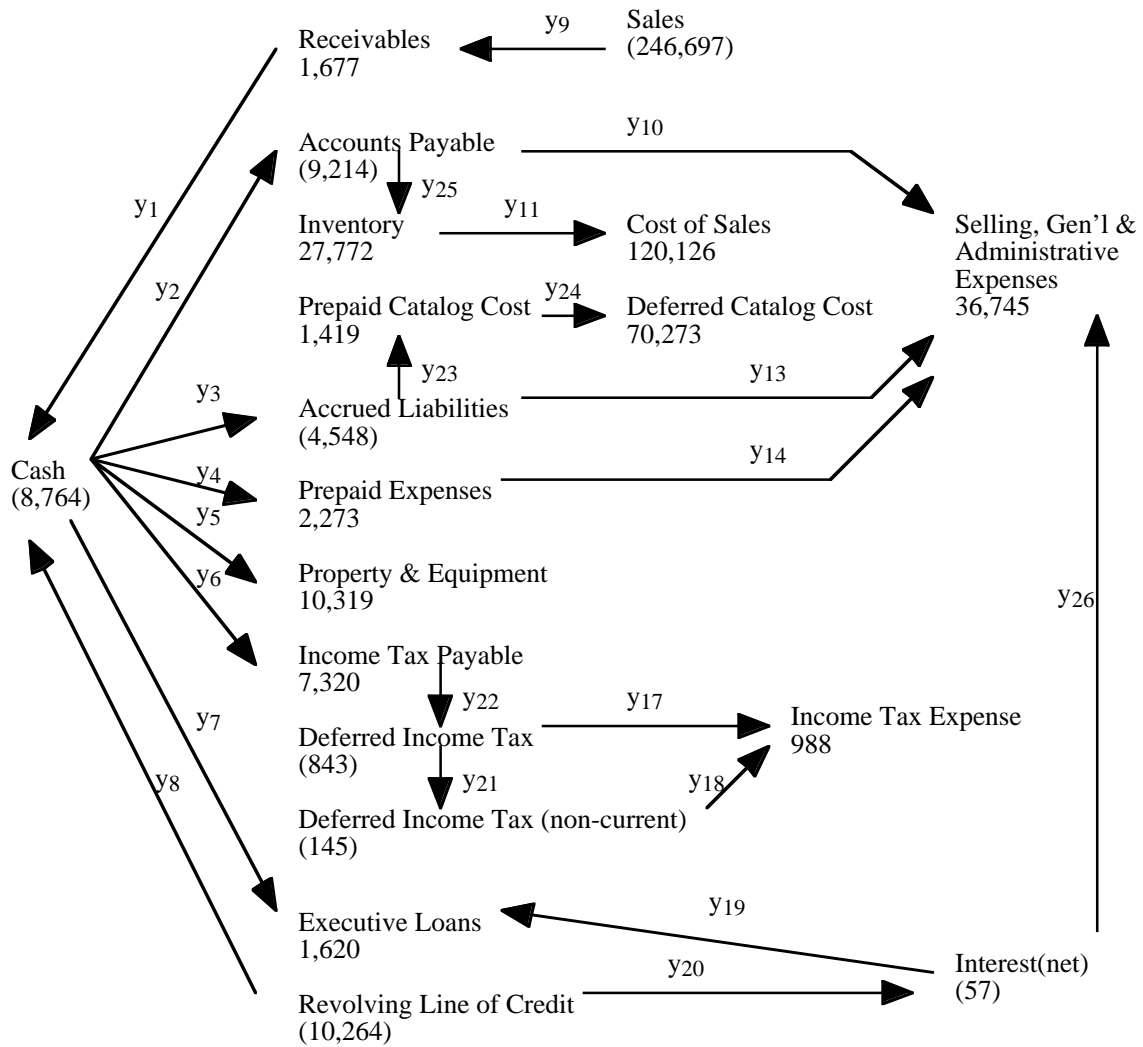
Coldwater Creek Directed Graph

Reduced Directed Graph (Using Additional Information)

The directed graph can often be simplified somewhat by examining footnotes and other statements available in the annual report. While they are not included here, we do report some of the information which was included in Coldwater's annual report.

Companies often report a depreciation number on the statement of cash flow, and Coldwater does, as well. Depreciation expense (journal entry y₁₅) is reported as 3,738. Also, the tax footnote often reveals a tax transaction. Coldwater's tax footnote states the

current portion of tax expense (y_{16}) is 6,869. Finally, Coldwater has a separate footnote that explains how the catalog costs work; it also says the amount of deferred catalog cost written off (y_{12}) was 66,600.



Coldwater Creek Reduced Graph

A Priori Transactions Bounds

Transaction	Maximum	Minimum
1	-Rec-Sales = 245,020	-Rec-Sales = 245,020
2	Inv+A/P+CGS+G&A = 175,429	Inv+A/P+CGS = 138,684
3	PpdCat+DefCat+AccLiab+G&A = 103,889	PpdCat+DefCat+AccLiab = 67,144
4	PpdExp+G&A = 39,018	PpdExp = 2,273
5	P&E = 10,319	P&E = 10,319
6	Tx/Pbl+DITcurr+DITlt +TxExp = 7320	Tx/Pbl+DITcurr+DITlt +TxExp = 7320
7	ExLoans = 1620	0
8	-RevLoC = 10,264	0
9	-Sales = 246,697	-Sales = 246,697
10	G&A = 36,745	0
11	CGS = 120,126	CGS = 120,126
12	66,600	66,600
13	G&A = 36,745	0
14	G&A = 36,745	0
15	3,738	3,738
16	6,869	6,869
17	DITlt+TxExp = 843	0
18	TxExp = 988	-DITlt = 145
19	ExLoans = 1620	0
20	-RevLoC = 10,264	0
21	DITlt+TxExp = 843	0
22	DITcurr+DITlt+TxExp = 0	0
23	PpdCat+DefCat = 71,692	PpdCat+DefCat = 71,692
24	DefCat = 70,273	DefCat = 70,273
25	Inv+CGS = 147,898	Inv+CGS = 147,898
26	-RevLoC-Int = 10,321	0

Spanning Trees

There are five loops in the reduced directed graph, as in the following table.

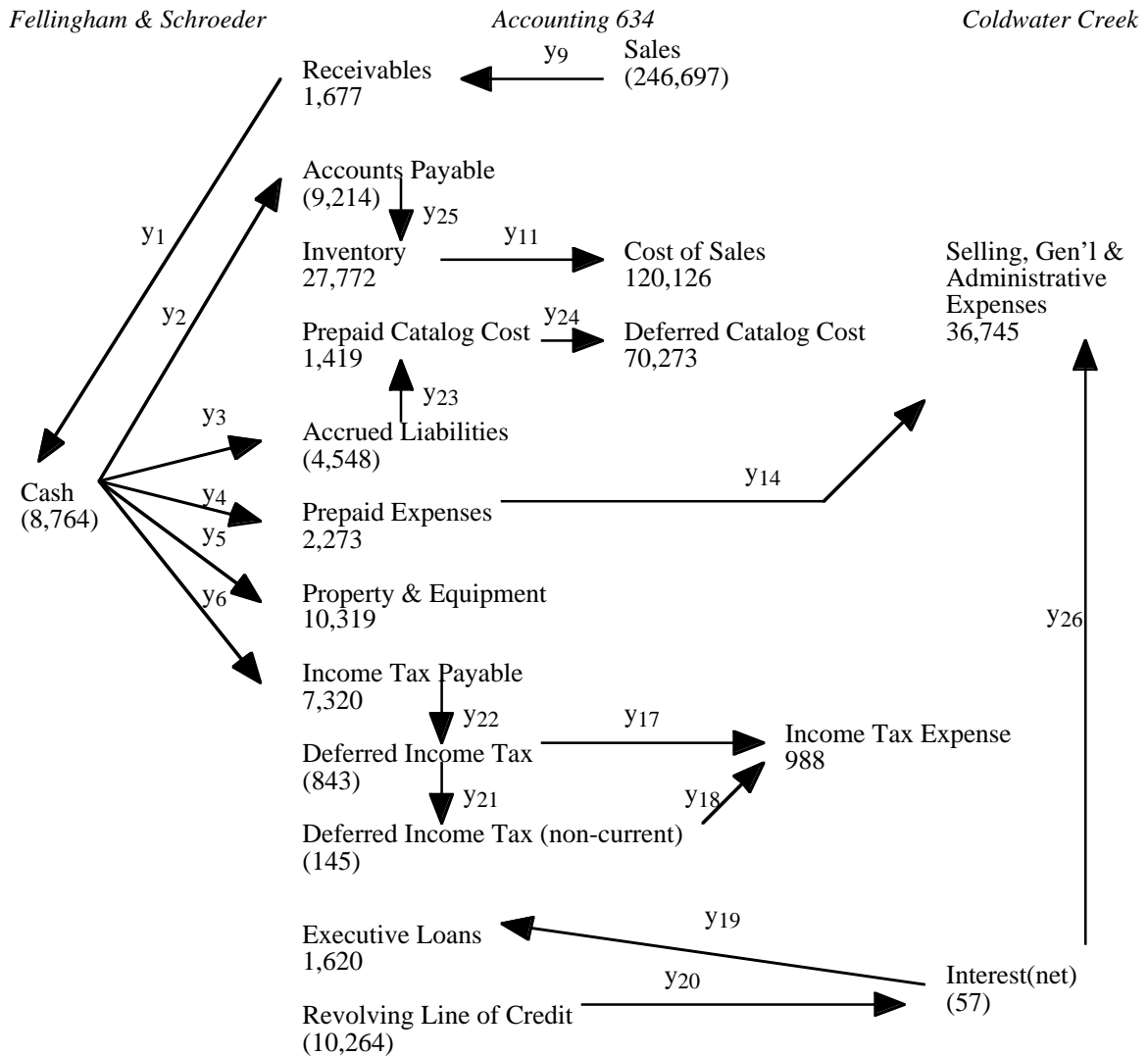
	Loop 1	$y_2^{**}, y_3^{**}, y_{10}, y_{13}$	
	Loop 2	$y_3^{**}, y_4^{**}, y_{13}, y_{14}$	
	Loop 3	$y_4^{**}, y_7, y_{14}, y_{19}, y_{26}$	
	Loop 4	y_7, y_8, y_{19}, y_{20}	
	Loop 5	$y_{17}, y_{18}^{**}, y_{21}$	

Loop 5 (the tax loop) is independent of the others and can be dealt with separately, and simply, later. The non-extremal variables are designated with **, and, of course, are not eliminated when forming spanning trees. Also notice that if y_7 and y_{19} are simultaneously removed, it results in the disconnection of executive loans, hence, that particular combination is not a spanning tree. The entire list of spanning trees is derived below.

Not all of the 28 spanning trees presented above are non-negative. For example, eliminating both y_{19} and y_{26} implies y_{20} must be negative. There are only 15 non negative spanning trees and they are presented in the table below.

	y_2	y_3	y_4	y_7	y_8	y_{10}	y_{13}	y_{14}	y_{19}	y_{20}	y_{26}
#1	138,684	67,144	30,317	0	0	0	0	28,044	1620	10,264	8701
#7	138,684	67,144	28,697	1620	0	0	0	26,424	0	10,264	10,321
#8	138,684	67,144	38,961	1620	10,264	0	0	36,688	0	0	57
#9	138,684	67,144	39,018	0	8701	0	0	36,745	1620	1563	0
#12	138,684	67,144	39,018	1563	10,264	0	0	36,745	57	0	0
#13	138,684	95,188	2273	0	0	0	28,044	0	1620	10,264	8701
#15	138,684	93,568	2273	1620	0	0	26,424	0	0	10,264	10,321
#16	138,684	103,832	2273	1620	10,264	0	36,688	0	0	0	57
#17	138,684	103,889	2273	0	8701	0	36,745	0	1620	1563	0
#20	138,684	103,889	2273	1563	10,264	0	36,745	0	57	0	0
#21	166,728	67,144	2273	0	0	28,044	0	0	1620	10,264	8701
#23	165,108	67,144	2273	1620	0	26,424	0	0	0	10,264	10,321
#24	175,372	67,144	2273	1620	10,264	36,688	0	0	0	0	57
#25	175,429	67,144	2273	0	8701	36,745	0	0	1620	1563	0
#28	175,429	67,144	2273	1563	10,264	36,745	0	0	57	0	0

For example, spanning tree one has arcs y_7 , y_8 , y_{10} , and y_{13} eliminated, and the transaction amounts in the table above can be read off the graph below.



Spanning Tree Number 1 (except for tax loop)

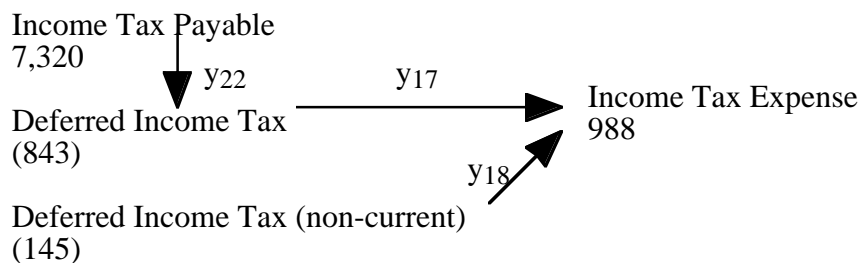
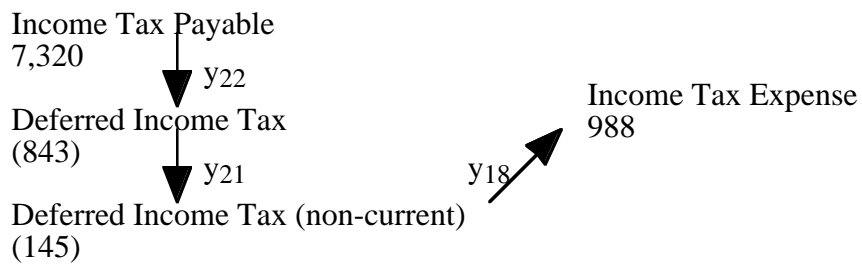
Several of the transactions are not included in a loop, and hence, are specified directly.

They are listed below.

y ₁	245,020
y ₅	10,319
y ₆	7320
y ₉	246,697
y ₁₁	120,126
y ₁₂	66,600
y ₁₅	3738
y ₁₆	6869
y ₂₂	0
y ₂₃	71,692
y ₂₄	70,273
y ₂₅	147,898

Specified Transactions for Coldwater Creek

All that remains is to resolve the tax loop transactions. Since y₁₈ is non extremal, there are two spanning trees in the tax loop.



y_{17}	0	843
y_{18}	988	145
y_{21}	843	0

Tax Loop Transactions for Coldwater Creek

The two tax loop spanning trees can be combined with the 15 non negative extreme points presented above. There are, then, a total of 30 extreme points for Coldwater. All the allowable transaction vectors are convex combinations of the extreme points presented above.

Made-up Additional Evidence

Suppose there is some additional audit evidence about transactions available. (These assumptions are made up for purposes of the example, and are not related to the actual data presented by Coldwater Creek.) The following bounds are placed on the disbursements for accounts payable, accrued liabilities and prepaid expenses.

$$138,684 \leq y_2 \leq 139,525$$

$$67,144 \leq y_3 \leq 71,500$$

$$2,273 \leq y_4 \leq 5,500$$

The bounds as expressed on the individual transactions are within the transaction bounds as implied by the given financial statements. The question is whether the additional evidence about transactions, when considered jointly, is consistent with the financial statements. The inequalities can be added together to form one set of bounds on the sum of the three transactions.

$$208,101 \leq y_2 + y_3 + y_4 \leq 216,525$$

Now compare the additional evidence bounds with the bounds determined by the extreme points.

	y_2	y_3	y_4	$y_2 + y_3 + y_4$
#1	138,684	67,144	30,317	236,145
#7	138,684	67,144	28,697	234,525
#8	138,684	67,144	38,961	244,789
#9	138,684	67,144	39,018	244,846
#12	138,684	67,144	39,018	244,846
#13	138,684	95,188	2273	236,145
#15	138,684	93,568	2273	234,525
#16	138,684	103,832	2273	244,789
#17	138,684	103,889	2273	244,846
#20	138,684	103,889	2273	244,846
#21	166,728	67,144	2273	236,145
#23	165,108	67,144	2273	234,525
#24	175,372	67,144	2273	244,789
#25	175,429	67,144	2273	244,846
#28	175,429	67,144	2273	244,846

Augmented extreme points

Table 6 presents the extreme points for the three transactions under consideration, along with a column for the sum. The minimum for the sum occurs in spanning trees #7, #15, and #23; the maximum occurs in trees #9, #12, #17, #20, #25, and #28.

$$234,525 \leq y_2 + y_3 + y_4 \leq 244,846$$

It is immediate that there is no point of intersection; there is not a feasible solution which is consistent with both the (assumed) additional audit evidence and the financial statements as given.

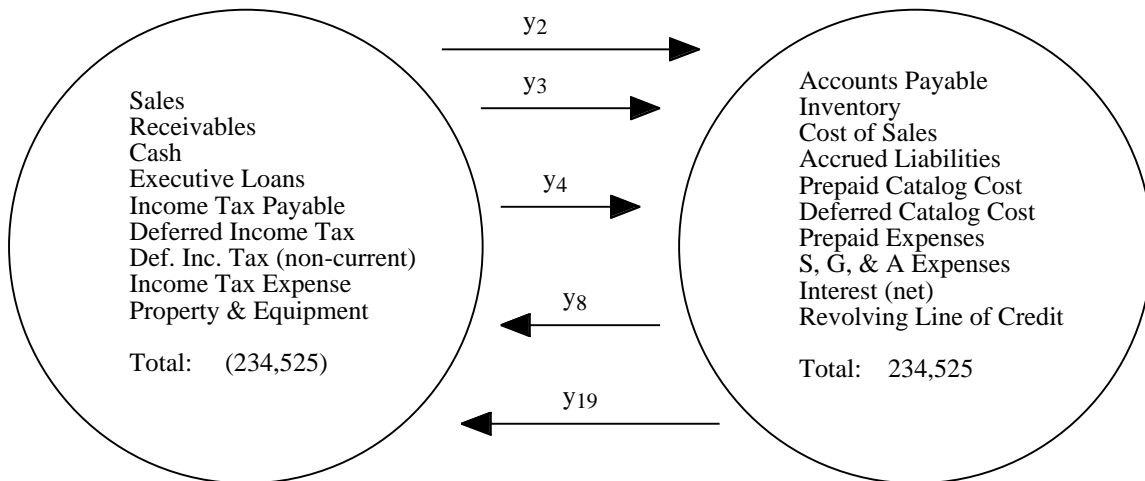
Audit evidence: $y_2 + y_3 + y_4 \leq 216,525$

Financial statements: $234,525 \leq y_2 + y_3 + y_4$

The issue of consistency, then, is decided in the negative.

Nearest Adjusted Financial Statements

The first step in finding the nearest financial statements which are consistent with the additional audit evidence is to find the circle picture which establishes the minimum of the sum of the three transactions. A little trial and error yields the circle picture below.

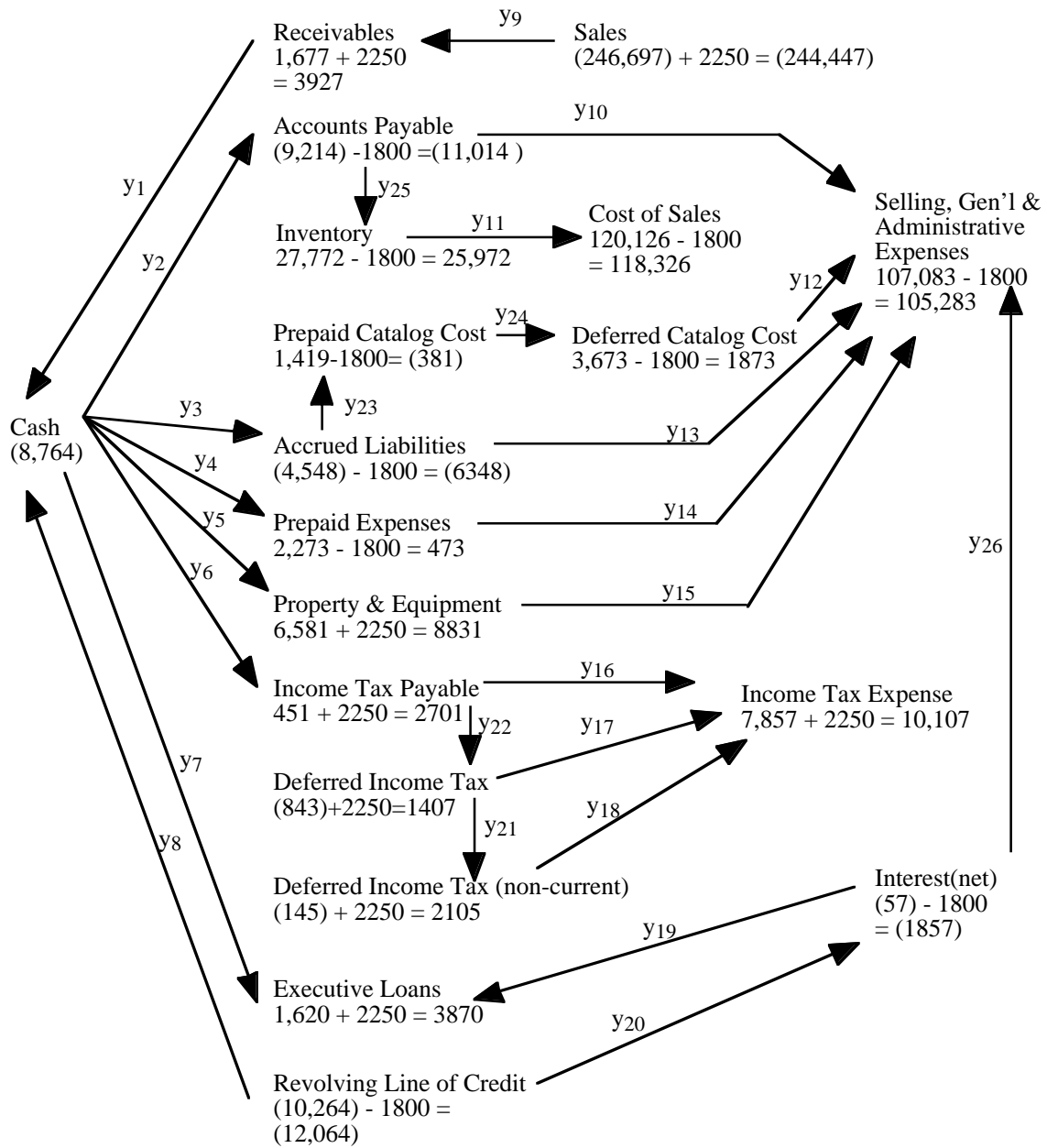


Actually, there are a couple of ways to generate the picture in this example. One is to realize that we are trying to minimize the sum of y_2 , y_3 , and y_4 , and employ a modified follow the arrows algorithm. For a minimum we *may* follow the arrows forward to maximize the aggregate account balance. Starting with the accounts at the head of the three arrows, following arrows will add all the accounts on the right except

interest and revolving line of credit. But they must be added, since we are required to follow arrows backwards from S, G, & A.

Alternatively, refer to the spanning trees where the sum of y_2 , y_3 , and y_4 is minimized. These are trees numbered 7, 15, and 23. For all those trees, y_8 and y_{19} are eliminated (set to zero). This implies that y_8 and y_{19} will connect the circles in the circle picture (set to zero), as well as y_2 , y_3 , and y_4 . And those are the arrows which generate the picture above.

Since the audit evidence states the sum of y_2 , y_3 , and y_4 can not exceed 216,525, the accounts on the right hand side must be decreased by $18,000 = 234,525 - 216,525$. The minimum distance method is to spread the difference evenly to all the accounts. Hence, subtract 1,800 from each of the 10 accounts on the right hand side. Similarly, there must be an increase to the accounts on the left. It seems reasonable, since cash is counted, that that not be adjusted. That leaves 8 accounts, each of which to be increased by 2,250. The minimum distance financial statements are represented by the following directed graph, which is the original Coldwater directed graph with the required adjustments.



Minimum Distance Financials