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Fluid Measure and Disbursement: Valuation of a Closely-Held Firm

William P. Dukes

There are about 24 million businesses in the United States, with something less than one-tenth of one percent actively traded. This case is hypothetical, but the valuation issues pertaining to many of those closely-held firms are real. The case illustrates an income statement adjustment, estimation of a required rate of return, application of discounts to an "as if actively traded" price, and valuation treatment of excess assets not needed in the operation of the firm. The desire for market data is clear, but for closely-held firms market data must be proxied by the best available information and applied to sometimes less than complete information pertaining to valuation issues for closely-held business. Some of these techniques are applied in the solution of the case.

I. INTRODUCTION

Fluid Measure and Disbursement: Valuation of a Closely-Held Business is a hypothetical case which pulls together in one case a number of issues pertaining to the valuation of closely-held businesses. The issues included in the case stem from personal experiences in valuing a variety of small firms over a number of years.

The issues, somewhat unique to closely-held firms, start with the purpose of the valuation. There are numerous reasons to value a business, some of the more common are, 1) estate and gift tax; 2) estate settlement; 3) divorce; and 4) sale of the business. In each of these situations a "going concern" value is desired, therefore a "liquidation" value is not considered, although some may want to know what each asset is worth should the business be dismantled. The reason for the valuation should be stated at the outset because values can differ depending on the purpose of the valuation. To simplify the issue, the purchase of a controlling interest normally requires a premium, whereas a fractional interest in a closely-

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held firm is in no way proportionate and will sell at a discount. These points will be covered in more detail when discounts are considered.

Financial statement adjustments may be desirable in view of the different accounting policies and practices and the form of the presentation. Audited financial statements are desired, but may not be available. At times the only type of statement available may be the income tax returns. In particular, officer compensation may require adjustment for small firms to represent the appropriate cost to the firm and to show the proper earning power of the business. Officer compensation is one of the more frequently made adjustments because owners of small businesses generally do not receive dividends and the amount of the compensation may be more related to earnings of the business than the value of the service provided. This adjustment will be demonstrated.

All valuations require some form of required return, whether for discounting or capitalizing earnings. Some of the valuation approaches require market data as part of the estimation process. The approaches to determining the required return will be reviewed in an illustration of the valuation process.

One of the features of the valuation process most unique to closely-held firms is the discounts applied to an "as if actively traded" value for the firm or to the equity value of the firm. There are three discounts to consider: 1) nonmarketability; 2) minority interest; and 3) key man. These discounts will be reviewed and applied in the valuation process.

The final factor which is somewhat unique to closely-held firm valuations, but which could apply to other valuations, is an excess of cash, liquid assets or other assets which are not needed nor employed in the operation of the business. These excess assets in this case are in the form of an investment in a mutual fund.

The second part of the paper contains a development of the case, to include the purpose of the valuation, the economic outlook and data presentation. Part three follows with consideration given to valuation approaches and includes an estimation of the required return. Part four pertains to valuation and application of the various discounts with some justification/documentation of the amounts involved for each of the discounts, and the integration of the value of "excess assets" to determine a firm aggregate or per share value of the equity of FM&D.

II. DEVELOPMENT OF THE CASE

Fluid Measure and Disbursement (FM&D) company is a firm that developed and manufactures measuring and disbursement instruments

and valves which are superior to most devices on the market today. The major owner of FM&D is Jack Menielle, who is an engineer by education and experience. About 15 years ago he decided to stop the 12 hour days and do consulting work when desirable jobs came along. This gave him time to "tinker" in his backyard shop. For some time, he had been displeased with the valves and instruments he used in the measurement and disbursement of various fluids from crude oil, natural gas, orchard watering systems to highly toxic chemicals, among others. Through experimentation he was able to redesign and improve the measurement of the pressure, flow, and disbursement of various types of fluids and gases.

Soon after the change in type of employment when he thought he had the time, Menielle completed an MBA at one of the best private universities in the state. While enrolled in the MBA program he took a Venture Capital course from a Dr. Jay Williams, that proved very valuable when he formed FM&D to manufacture and sell his control instruments.

Menielle started his business (sole proprietorship) with a skeleton management team formed by the more experienced of his MBA classmates and long-time engineering colleagues. The products were an immediate success but the start up costs and problems were difficult to handle the first year of operation and Menielle longed for some of those short 12-hour days he had when he was a practicing engineer.

During the second year Menielle's management team began to function more efficiently by cutting costs where they could be cut and each staff member performing in such a way to ease the pressure and tension on all the other staff members. Midway through the second year the "kinks" had been worked out and the "team" was functioning well.

In time, it became obvious that the business of manufacturing and selling products which have an extended life and derive their demand from cyclical businesses would also be cyclical. As the business grew and stabilized somewhat, Menielle decided to incorporate in order to take advantage of limited liability and the limit placed on corporate taxes. The incorporation was effective January 1, 1984, just in time to see the oil industry problems worsen.

Menielle is now nearing what some call retirement age and is interested in grooming his son, James, to take control in a few years. James has been employed with FM&D since graduating from college and has either understudied or filled most of the management positions with the company but still has much to learn. Menielle plans to give shares to his son, James, over the next few years but needs a valuation of the firm to comply with government regulations pertaining to gift taxes.

To make the valuation Menielle asked Williams to perform that function. Menielle agreed to provide financial statements and any information available that would help Williams with the valuation.

Williams knew that the Internal Revenue Service (IRS) could have an interest in his valuation so he prepared to review Revenue Ruling 59-60; 1959 (RR59-60) as a starting point. RR59-60 (see Pratt, 1993, pp. 657-662) does not specify how a valuation is to be made, but does provide suggestions of factors that should be considered in the valuation process. These factors include:

- Brief history and description of the business.
- Economic outlook in general and any specific impact on the firm.
- Book value and financial condition.
- Earning history and dividend payout capacity.
- Any previous sales of stock and the proportion of stock to be valued.
- The market prices of comparable stocks, if any can be identified.
- Goodwill and any other intangibles.
- Any other factor considered to be important.

In his review of material, Williams found that there are three shareholders of FM&D, Menielle, his wife, Ann, and son, James. Menielle holds 980 shares with his wife and son owning the remaining two percent. The book value per share at the end of 1984 was reported to be $881.28 and at the close of business 1994 it was $1,632.84.

Much of the plant and equipment needs modernization and/or replacement due to age, operating efficiency and new technology. In anticipation of these capital needs, no dividends have been paid. Menielle has never been fond of debt and has tried to reduce the firms debt as earnings permit, but without success. In addition to the long-term debt, he continues to operate on a $300,000 line of credit.

Oil and chemical industries are large customers of FM&D which causes some concern about the intentional slowing of the economy and the increases in interest rates through actions taken by the Federal Reserve. However, the more recent interest rate decrease in long-term government bonds provides hope. Sales have begun to decline and the expectations are that full-year sales will be off about five percent from 1994 which were also off slightly from 1993.

Recent Associated Press (AP) news releases provide details to support one headline, "Gloomy signs point to recession," with the following excerpts:

- Index of Leading Economic Indicators fell for a third straight month.
- Eight of the 11 forward-pointing business barometers turned down.
- Unexpected weakness in national employment.
- Labor Department reports business payrolls shrank by 101,000, the biggest setback since April 1991.
- The first pullback in manufacturing activity since August 1993.
- Declines in the leading index has accurately predicted all nine of the country's postwar recessions.
- The Dow Jones industrial average was down 78 points in late afternoon trading as investors began to worry about the impact of a weak economy on corporate profits.
- The number of oil and gas rigs operating nationwide dropped by 13 this week.
- Nation hit with biggest job loss in four years.

In addition, an inability to obtain long-term contracts has caused a greater variability in the cost of raw materials, which has caused the cost of goods sold to vary somewhat in the last few years. The goal has been to maintain a gross profit margin of at least 40 percent.

From the financial statements provided, Williams put together a lifetime summary (since incorporation) of income statements (Table 1) and balance sheets (Table 2). Table 3 is a percentage income statement for the company and industry for the years 1990-1995. Table 4 is a percentage balance sheet for the company and industry for the same six year period. Table 5 provides financial ratios for the company and related industry data gathered from *Robert Morris Associates* (1994).

Williams noted that the Federal Reserve had increased the discount rate seven times in 1994 in an attempt to hold inflation at a low level and intentionally slow the economy. However, the fear of a recession caused the Federal Reserve to reduce its discount rate. The impact of these changes was in turn reflected in changing interest rates. During the Federal Reserve activities surrounding the discount rate, the rate on Treasury Bills increased to almost six percent and thirty-year Treasury Bonds to well over seven percent. With the economy slowing, the T-Bills backed off to something over five percent and long bonds to about 6.6 percent, with a fair amount of fluctuation in rates from week to week, depending on the optimism or pessimism shown in the market place.

The valuation that Menielle wants Williams to perform is the fair market value, or estimate thereof, pertaining to the common stock of the

Table 1
Fluid Measure and Disbursement Statement of Income for Year Ended December 31

Income Statement	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*
Sales	$5,517,024	$5,802,413	$4,724,713	$5,102,424	$5,124,713	$5,824,724
Cost of Goods Sold	3,255,044	3,481,447	2,882,074	3,112,478	2,972,333	3,582,205
Operating Expenses						
Officer Comp.	331,021	348,145	283,483	306,145	307,483	349,483
Depreciation	82,755	92,404	93,474	93,768	84,153	95,777
Other Operating	1,616,488	1,671,529	1,361,737	1,477,778	1,494,258	1,698,237
Total Oper. Exp.	2,030,264	2,112,078	1,738,694	1,877,692	1,885,894	2,143,498
Operating Earnings	231,715	208,887	103,944	112,253	266,485	99,020
Other Income			6,582	1,555	621	963
Total Income	231,715	208,887	110,526	113,808	267,106	99,983
Interest	82,479	83,892	78,558	80,427	80,538	84,003
Earng. before Taxes	149,236	124,995	31,968	33,381	186,569	15,981
Taxes	48,398	37,248	5,004	5,007	56,012	2,397
Net Income	$100,837	$87,747	$26,964	$28,375	$130,557	$13,584

Income Statement	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*
Sales	$5,768,722	$5,913,724	$6,024,247	$5,891,324	$6,013,242	$5,713,724
Cost of Goods Sold	3,415,083	3,666,508	3,584,426	3,416,967	3,631,998	3,485,371
Operating Expenses						
Officer Comp.	346,123	354,823	361,455	353,479	360,795	342,823
Depreciation	96,171	97,539	98,838	99,964	101,435	102,384
Other Operating	1,680,595	1,576,044	1,786,751	1,785,259	1,756,656	1,657,442
Total Oper. Exp.	2,122,889	2,028,407	2,247,044	2,238,703	2,218,886	2,102,650
Operating Earnings	230,749	218,808	192,776	235,653	162,358	125,702
Other Income	2,457	259	1,663	1,392	1,261	1,512
Total Income	233,206	219,067	194,439	237,045	163,619	127,214
Interest	82,456	85,094	88,304	85,628	81,628	84,710
Earng. before Taxes	150,750	133,973	106,135	151,417	81,990	42,504
Taxes	42,042	35,500	24,643	42,302	16,127	6,376
Net Income	$108,707	$98,474	$81,493	$109,114	$65,864	$36,128

Table 2
Fluid Measure and Disbursement Balance Sheet as of December 31

Balance Sheet	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*
Cash	$275,851	$281,994	$283,881	$285,850	$320,531	$295,939
Accounts Receivable	855,139	874,180	880,031	886,134	916,147	917,412
Inventory	799,968	817,781	823,255	828,964	855,467	858,224
Other current Assets	136,926	151,754	143,393	104,492	124,338	132,300
Total Current Assets	2,067,884	2,125,709	2,130,560	2,105,439	2,216,483	2,203,876
Land	106,514	106,514	106,514	106,514	106,514	106,514
Buildings	297,919	297,919	297,919	297,919	197,919	297,919
Equipment	511,680	521,764	530,538	533,235	536,047	549,103
Accumulated Depr.	243,013	335,417	428,873	522,653	506,811	602,495
Net Bldgs/Equipment	566,586	484,266	399,584	308,501	227,155	244,527
Other Assets	17,528	103,446	202,151	338,042	399,733	404,477
Total Assets	2,758,512	2,819,935	2,838,809	2,858,495	2,949,885	2,959,393
Accounts Payable	468,947	493,205	401,601	427,706	414,600	490,102
Notes Payable	248,266	261,109	212,612	229,609	230,612	262,113
Other Curr. Liab.	524,117	514,657	663,252	623,007	577,595	485,730
Total Curr. Liab.	1,241,330	1,268,970	1,277,464	1,280,322	1,222,807	1,237,945
Long-Term Debt	551,702	551,702	551,702	551,702	551,702	551,702
Other noncurrent	84,197	30,233	13,649	2,355	20,703	1,490
Total Liabilities	1,877,229	1,850,905	1,842,815	1,834,378	1,795,212	1,791,136
Cap. Stock $100 Par	100,000	100,000	100,000	100,000	100,000	100,000
Paid in Capital	500,000	500,000	500,000	500,000	500,000	500,000
Retained Earnings	281,283	369,030	395,994	424,117	554,673	568,257
Total Equity	881,283	969,030	995,994	1,024,116	1,154,673	1,168,256
Total Liab. & Equity	$2,758,512	$2,819,935	$2,838,809	$2,858,495	$2,949,885	$2,959,393

continued

Table 2
Continued

Balance Sheet	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*
Cash	$402,893	$229,775	$365,424	$423,003	$257,591	$364,375
Accounts Receivable	880,555	931,023	927,328	899,851	962,414	1,026,067
Inventory	979,874	929,021	1,014,274	1,035,344	1,047,097	959,869
Other current Assets	11,703	195,090	57,634	96,624	183,293	100,757
Total Current Assets	2,275,591	2,284,909	2,308,026	2,460,925	2,430,607	2,445,313
Land	106,514	106,514	106,514	106,514	106,514	106,514
Buildings	297,919	297,919	297,919	297,919	297,919	297,919
Equipment	553,154	564,025	573,872	582,052	592,963	696,511
Accumulated Depr.	498,759	596,234	595,136	694,774	795,722	808,575
Net Bldgs/Equipment	352,314	265,710	276,655	185,197	95,161	185,855
Other Assets	301,070	447,288	470,484	485,423	652,322	572,212
Total Assets	3,035,488	3,104,420	3,161,679	3,238,059	3,284,604	3,309,894
Accounts Payable	490,341	502,667	512,061	499,763	511,126	475,667
Notes Payable	248,055	272,031	301,212	276,892	240,530	268,545
Other Curr. Liab.	460,622	389,460	334,416	342,713	342,118	341,363
Total Curr. Liab.	1,199,018	1,164,157	1,147,689	1,119,368	1,093,773	1,085,575
Long-Term Debt	551,702	551,702	551,702	551,702	551,702	551,702
Other noncurrent	7,805	13,123	5,051	638	6,285	3,645
Total Liabilities	1,758,524	1,728,982	1,704,442	1,671,708	1,651,760	1,640,922
Cap. Stock $100 Par	100,000	100,000	100,000	100,000	100,000	100,000
Paid in Capital	500,000	500,000	500,000	500,000	500,000	500,000
Retained Earnings	676,964	775,438	857,237	966,351	1,032,843	1,068,972
Total Equity	1,276,964	1,375,437	1,457,237	1,566,351	1,632,843	1,668,972
Total Liab. & Equity	$3,035,488	$3,104,420	$3,161,679	$3,238,059	$3,284,604	$3,309,894

Table 3
Fluid Measure and Disbursement Percentage Income Statement for Company and Industry 1990-1995

	Company							*Industry (SIC 3823)*					
	1990	*1991*	*1992*	*1993*	*1994*	*1995*		*1990*	*1991*	*1992*	*1993*	*1994*	*1995*
Sales	100.00	100.00	100.00	100.00	100.00	100.00	Sales	100.00	100.00	100.00	100.00	100.00	100.00
Gross Profit	40.8	38.00	40.5	42.00	39.6	39.00	Gross Profit	41.9	39.5	42.0	42.4	39.6	N/A
Operating Expenses													
Officer Comp.	6.00	6.00	6.00	6.00	6.00	6.00	Officers Comp.	5.1	4.4	4.0	4.0	4.0	N/A
Depreciation	1.67	1.65	1.64	1.70	1.69	1.79							
Other Operating	29.13	26.65	29.66	30.30	29.21	29.01							
Total Oper. Exp.	36.80	34.30	37.30	38.00	36.90	36.80	Total Oper. Exp.	36.4	34.3	37.3	37.0	36.9	N/A
Operating Earnings	4.00	3.70	3.20	4.00	2.70	2.20	Operating Profit	5.5	5.2	4.8	5.4	2.6	N/A
Other Income	0.04	0.00	0.03	0.02	0.02	0.03							
Interest	1.43	1.44	1.47	1.45	1.36	1.48	Interest						
Earnings before Taxes	2.61	2.27	1.76	2.57	1.36	0.74	Profit before Taxes	3.3	3.4	3.3	4.3	1.7	N/A
Taxes	0.73	0.60	0.40	0.72	0.26	0.11							
Net Income	1.88	1.67	1.36	1.85	1.11	0.63							

Table 4
Fluid Measure and Disbursement Percentage Balance Sheet for Company and Industry 1990-1995

	Company						*Industry (SIC 3823)*					
	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*
Assets %												
Cash	13.3	7.4	11.6	13.1	7.8	11.0	8.2	7.5	10.9	9.5	9.5	N/A
Accounts Rec.	29.0	30.0	29.3	27.8	29.3	31.0	32.5	31.2	31.5	32.3	30.4	N/A
Inventory	32.3	29.9	32.1	32.0	31.9	29.0	28.0	30.1	27.0	28.9	29.6	N/A
Other Current	.4	6.3	0*	3.1	5.0	2.6	2.7	3.5	3.6	2.2	2.7	N/A
Total Current	75.0	73.6	73.0	76.0	74.0	73.6	71.5	72.3	73.0	72.9	72.3	N/A
Land	3.5	3.4	3.4	3.3	3.2	3.2						
Buildings	9.8	9.6	9.4	9.2	9.1	9.0						
Plan & Equipment	18.2	18.2	18.2	18.0	18.1	21.0						
Accum. Depreciation	16.4	19.2	18.8	21.5	24.3	24.4						
Net Bldg./Equip.	11.6	8.6	8.8	5.7	2.9	5.6	19.6	19.0	18.4	18.5	19.5	N/A
Other	9.9	14.4	14.9	15.0	19.9	17.6	5.5	6.1	6.0	5.7	5.6	N/A
Total Assets	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	N/A
Liabilities and Owner's Equity %												
Accounts Payable	16.2	16.2	16.2	15.4	15.6	14.4	12.3	13.4	12.0	12.9	12.7	N/A
Notes Payable	8.2	8.8	9.5	8.6	7.3	8.1	11.3	11.5	10.1	9.7	7.6	N/A
Other Liabilities	15.2	12.5	10.6	10.6	10.4	10.3	11.9	9.6	13.1	13.5	12.5	
Total Current Liab.	39.5	37.5	36.3	34.6	33.3	32.8	39.4	38.7	38.4	40.1	37.1	N/A
Long-Term Debt	18.2	17.8	17.4	17.0	16.8	16.7	14.0	13.1	11.0	9.7	10.7	N/A
Other Non-Current	.3	.4	.2	0*	.2	.1	4.8	4.3	2.4	2.9	3.0	N/A
Total Liabilities	57.9	55.7	53.9	51.6	50.3	49.6	59.3	57.2	52.6	53.3	51.5	
Capital Stock	3.3	3.2	3.2	3.1	3.0	3.0						
Paid-in Capital	16.5	16.1	15.8	15.4	15.2	15.1						
Retained Earnings	22.3	25.0	27.1	29.8	31.4	32.3						
Total Equity	42.1	44.3	46.1	48.4	49.7	50.4	40.7	42.8	47.4	46.7	48.5	N/A
Total Liab. & Equity	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	N/A

Note: *Trace

Table 5
Fluid Measure and Disbursement Ratio Analysis 1990-1995

	Company							*Industry (SIC 3823)*						
Financial Ratios FM&D	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*Average*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*Average*
Liquidity														
Current Ratio CA-Inv/CI	1.90	1.96	2.01	2.20	2.22	2.24	2.09	1.9	2.0	2.1	1.9	2.0		2.0
Quick Ratio CA-Inv/CI	1.08	1.16	1.13	1.27	1.26	1.36	1.21	1.0	1.1	1.2	1.0	1.1		1.1
Receivables Turnover	6.55	6.35	6.50	6.55	6.25	5.57	6.30	5.9	6.3	6.4	6.2	6.6		6.3
Avg. Collection Time (days)	55.71	57.46	56.19	55.75	58.42	65.55	58.18							
Inventory Turnover (cgs/I)	3.49	3.95	3.53	3.30	3.47	3.63	3.56	3.5	3.5	3.7	3.7	3.9		3.7
Profitability														
Operating Return/assets %	7.60	7.05	6.10	7.28	4.94	3.80	6.13							
Operating Profit Margin %	4.00	3.70	3.20	4.00	2.70	2.20	3.30	5.5	5.2	4.8	5.4	2.6		4.7
Gross Profit Margin %	40.80	38.00	40.50	42.00	39.60	39.00	40.00	41.9	39.5	42.0	42.1	39.6		41.0
Net Profit Margin %	1.88	1.67	1.35	1.85	1.10	.63	1.42							
Asset Turnover (S/A)	1.90	1.90	1.91	1.82	1.83	1.73	1.85	1.7	1.8	1.8	1.9	1.9		1.8
Fixed Assets Turnover	12.57	15.89	15.72	20.22	29.94	19.54	18.98	10.2	11.5	13.3	13.0	11.2		11.8
Financing														
Debt Ratio (D/A)	.58	.56	.54	.52	.50	.50	.53							
Times Interest Earned	2.80	2.57	2.18	2.75	1.99	1.48	2.30	2.9	2.5	3.1	3.1	3.5		3.0
Debt to Equity	1.38	1.26	1.17	1.07	1.01	.98	1.14	1.5	1.4	1.0	1.4	1.1		1.3
Returns														
Return on Equity (ROE) %	8.51	7.16	5.59	6.97	4.03	2.16	5.74							
Return on Assets (ROA) %	3.58	3.17	2.58	3.37	2.01	1.09	2.63							
Return Equity before Tax %	11.81	9.74	7.28	9.67	5.02	2.55	7.68	20.6	16.1	15.7	14.3	11.2		15.6
Return Assets before Tax %	4.97	4.32	3.36	4.68	2.50	1.28	3.52	6.8	5.3	6.9	5.8	5.1		6.0

firm with an emphasis on a minority interest of about 100 shares which will be given to Menielle's son. Menielle has no intention of releasing controlling interest.

In Williams review of the financial data contained in Tables 1-5, he found the following:

1. *Liquidity* for FM&D is good, approximately matching industry data.
2. *Profitability* is a matter of concern. In particular operating and net profit margins are low and have shown a declining trend for the time period 1993-1995. Williams also made a note to review the age and efficiency of fixed assets as well as the depreciation policy being followed.
3. *Financing:* Interest coverage is low in comparison to industry data and has a declining trend 1993-1995. Default risk increases as the coverage ratio falls below two. The debt to equity ratio is improving but this is more a function of increasing equity than decreasing debt.
4. *Returns* are low and declining—substantially below industry averages.

Profit margins and returns are of concern. Gross profit margins are only marginally below industry averages as shown in the Percentage Income Statement (Table 3), and total operating expenses are about the same as those of the industry data.

An obvious and not uncommon adjustment to the income statement is officer compensation. FM&D has held officer compensation at six percent of sales, which is considerably higher than industry averages. The assumption is that FM&D could hire a manager to perform the same functions performed by Menielle for less money. The adjustment suggested by this assumption is to reduce officer compensation by the difference between the six percent shown by FM&D and the lower percentage amounts shown for the industry. The difference is added to earnings before taxes, (as well as operating earnings) as if the lower compensation had been paid. This adjustment is for valuation purposes only and in no way suggests practices which are illegal, immoral or unethical. Most sole proprietorships, partnerships and S Corporations would have total earnings before taxes flow to individual's accounts to be taxed at a personal tax rate. An additional adjustment is made to remove "other income" because it is the distributions made by the mutual fund which are valued separately.

After adjusting the income statement for officer compensation and removing the distributions from the mutual fund that was shown as "other income" the average earnings after taxes for the six year time period is $146,641 compared to $83,297 before the adjustments (See Table 6).

After adjusting operating earnings, earnings before taxes and net income, the operating profit margin and returns are more in line with industry averages as shown in Table 7.

III. VALUATION APPROACHES

There are several approaches that could be used in valuing the common stock of a closely-held company. In most valuation approaches, however, there are at least two factors that are required. One is a consideration of the earning power of the company, normally shown by the income statements of the firm over a number of years. The other factor is a required return necessary to be used as a discount rate if a series of earnings are used, or as a capitalization rate if there is a level of earnings intended to be capitalized. In any case, a required return on the equity is necessary for most of the approaches. Brigham and Gapenski (1994) offer three methods of estimating the required return on equity which can be used independently or as part of the cost of capital in capital budgeting. The suggestions are:

1. The CAPM Approach estimates the required return for shareholders, *ks*, as shown by the equation $ks = krf + (km - krf)bi$. The CAPM approach requires the use of a beta, *Bi*, for the stock in question. It also requires a return on a market proxy (*km*), and some proxy for what many call a risk-free rate (*krf*). Since FM&D is a closely-held company, market data are not available, which means that one or more of the factors must be proxied. As an example, beta is not available, therefore it must be proxied or the CAPM approach cannot be used. Two suggestions are made as to how one can proxy the beta. The first, as suggested by Brigham and Gapenski (1994), is what they call a "pure play". The "pure play" method requires the use of the beta of "single business" firms that are in the same line of business as the firm in question, which are actively traded, and the betas can be calculated from the market data present. The second approach, when market data are not available, is to use an accounting beta method. In this approach accounting variables, such as return on assets or

Table 6
Fluid Measure and Disbursement Adjusted Statement of Income for Years 1990-1995

	1990	*1991*	*1992*	*1993*	*1994*	*1995*
Sales	$5,768,722	$5,913,724	$6,024,247	$5,891,324	$6,013,242	$5,713,724
Cost of Goods Sold	3,415,083	3,666,508	3,584,426	3,416,967	3,631,998	3,485,372
Operating Expenses						
Officer Compensation	294,205	260,204	240,970	235,653	240,530	228,549
Depreciation	96,171	97,539	98,838	99,964	101,435	102,384
Other Operating	1,680,595	1,576,044	1,786,751	1,785,259	1,756,656	1,657,442
Total Oper. Exp.	2,070,971	1,933,787	2,126,559	2,120,876	2,098,621	1,988,375
Operating Earnings	282,668	313,429	313,262	353,481	282,623	239,977
Interest	82,456	85,094	88,304	85,628	81,629	84,710
Earnings Before Taxes	200,212	228,336	224,959	267,853	200,995	155,267
Taxes	61,333	72,301	70,984	87,713	61,638	43,804
Net Income	$138,879	$156,035	$153,975	$180,140	$139,357	$111,463

Table 7
Fluid Measure and Disbursement Ratio Analysis 1990-1995 (*Adjusted*)

	Company							*Industry (SIC 3823)*						
Financial Ratios FM&D	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*Average*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*Average*
Liquidity														
Current Ratio CA-Inv/CI	1.90	1.96	2.01	2.20	2.22	2.24	2.09	1.9	2.0	2.1	1.9	2.0		2.0
Quick Ratio CA-Inv/CI	1.08	1.16	1.13	1.27	1.26	1.36	1.21	1.0	1.1	1.2	1.0	1.1		1.1
Receivables Turnover	6.55	6.35	6.50	6.55	6.25	5.57	6.30	5.9	6.3	6.4	6.2	6.6		6.3
Avg. Collection Time (days)	55.71	57.46	56.19	55.75	58.42	65.55	58.18							
Inventory Turnover (cgs/I)	3.49	3.95	3.53	3.30	3.47	3.63	3.56	3.5	3.5	3.7	3.7	3.9		3.7
Profitability														
Operating Return/assets %	7.60	7.05	6.10	7.28	4.94	3.80	6.13							
Operating Profit Margin %	4.00	3.70	3.20	4.00	2.70	2.20	3.30	5.5	5.2	4.8	5.4	2.6		4.7
Gross Profit Margin %	40.80	38.00	40.50	42.00	39.60	39.00	40.00	41.9	39.5	42.0	42.1	39.6		41.0
Net Profit Margin %	2.43	2.69	2.57	3.07	2.33	1.97	2.51							
Asset Turnover (S/A)	1.90	1.90	1.91	1.82	1.83	1.73	1.85	1.7	1.8	1.8	1.9	1.9		1.8
Fixed Assets Turnover	12.57	15.89	15.72	20.22	29.94	19.54	18.98	10.2	11.5	13.3	13.0	11.2		11.8
Financing														
Debt Ratio (D/A)	.58	.56	.54	.52	.50	.50	.53							
Times Interest Earned	2.80	2.57	2.18	2.75	1.99	1.48	2.30	2.9	2.5	3.1	3.1	3.5		3.0
Debt to Equity	1.38	1.26	1.17	1.07	1.01	.98	1.14	1.5	1.4	1.0	1.4	1.1		1.3
Returns														
Return on Equity (ROE) %	10.99	11.36	10.64	11.55	8.58	6.73	9.98							
Return on Assets (ROA) %	4.62	5.03	4.90	5.59	4.27	3.40	4.64							
Return Equity before Tax %	15.87	16.62	15.55	17.19	12.39	9.39	14.50	20.6	16.1	15.7	14.3	11.2		15.6
Return Assets before Tax %	6.68	7.36	7.17	8.31	6.16	4.74	6.74	6.8	5.3	6.9	5.8	5.1		6.0

return on equity, are used in regression analysis to create a characteristic line for the company in question, the slope of which is the beta. This technique is described by Beaver and Manegold (1975), among others.

2. The Discounted Cash Flow (DCF) Approach requires a yield and a projection of appreciation or growth in earnings and/or dividends. The yield is the next period's dividend, divided by the price. In this case, no dividends have been paid, nor are they anticipated, and the price is really what we are looking for, so the DCF approach is not useful at this point.
3. Bond Yield + Risk Premium Approach. The bond yield can be estimated by a comparison with other companies that are similar in financial risk, or by calling the investment banker who helped issue the long-term debt in the capital structure or the banker making the loan. Given a quality rating, an estimate can be made. A risk premium is added to the bond yield. The risk premium in this particular case is the equity risk premium over bonds which can be estimated from Ibbotson (1992) data or a rough approximation made by a comparison with a particular quality of bond and the returns currently being received by "small cap equity" companies.

In his consideration of "comparable" companies, Brigham refers to "pure play" firms, and Revenue Ruling 59-60(see Pratt, 1993, pp. 657-662)) refers to "market prices of comparable stocks." Pratt (1986) suggests that direct comparisons require more than the same industry code for the information to be useful. For comparability, Pratt says criteria would include: 1) asset mix; 2) age of assets; 3) accounting policies; 4) comparative capital structures; 5) return on equity; and 6) size. Confirmation of comparability requirements is provided by Plutchock (1985) when he suggests: 1) the same line of business; 2) same size range; 3) similar capital structure; and 4) vital financial ratios, especially those concerning earnings, and stock that is freely and fairly traded, preferably listed.

Unfortunately, "pure play" and/or comparable companies that are actively traded could not be identified. However, 10 firms were identified as being in the same SIC code in which part of the business of each overlapped with FM&D. A brief summary of selected financial data were taken from Value Line. The average earnings growth as projected by Value Line is about 10.5 percent (with a 5.7 percent standard deviation), an average price earnings ratio of 14.6 and a 3-5 year projected price

earnings ratio of 14.7 on average with a 2.8 standard deviation. On the basis of sales, the average of which is about $893 million, these 10 firms are all very much larger than the $5-6 million shown by FM&D. The smallest firm in the group is more than 18 times the size of FM&D. With the S&P 500 P/E at about 14.5 and the Dow Jones P/E at about 14 as shown in *Outlook* (1995) one could use these data as a very rough starting point—not as comparables, but as a proxy for an average stock.

Consistent with the CAPM approach would be a rate found by adding an equity risk premium to the return on a default free long-term bond. Pratt calls this a "build up" approach and uses a long-term government bond and the equity risk premium (common stock return less the government bond return) shown in Ibbotson data. The long-term government bond is yielding about 6.6 percent and the equity risk premium for large firms is about 7.4 percent (12.5 percent for small firms). Therefore, the desired return for large high quality firms would be about 14 percent and about 19.1 percent for small firms.

As good as the constant growth model is in theory, it does not fit in the valuation of most closely-held firms. Most owners of closely-held firms receive their compensation in the form of salary. The great majority of small/closely-held firms do not pay dividends whether or not the capacity to pay is available. Even after the income statement adjustments, there is no discernable growth trend for earnings. Therefore, the model would not be appropriate for most closely-held firms.

IV. VALUATION

In the valuation process, two or more approaches may be used when sufficient information is available to support the approaches selected. An attempt was made to identify "comparables" and "pure play" firms without sufficient success. This is what some call the "market" or comparables approach. The "adjusted book value" approach is more of "liquidation" valuation which is rejected because a "going concern" value is requested. The "income" or "earnings" approach appears to be the most appropriate under the circumstances given. Earnings, as adjusted, are shown to be at a level with no discernible trend beyond the cyclical nature of the business. Therefore, a capitalization rate will be employed in the valuation process. However, before the numbers are tied together a review of the various "discount" documentation would be desirable.

Further investigation by Williams provided an additional comparison useful in the valuation of small and/or closely-held firms found in *Mergerstat Review 1993* (Merrill Lynch Business Advisory Services, 1994)

in which the acquisition of public companies brought price-earning (P/E) ratios about 30.3 percent higher than private (closely-held) companies. This comparison covered 2,376 acquisitions over the 10 year period 1984-1993. In a further comparison of price-earning ratios based on size alone, companies with a value of $100 million or more brought P/E ratios about 39.5 percent higher than those selling at $25 million or less. The most dominant size of the small firms is $5 million or less.

Additional information Williams thought might be useful is the premiums offered over market price for a controlling interest. In the petroleum industry acquisitions, 100 percent premiums were offered on several occasions, but many non-petroleum acquisitions were made at premiums up to 125 percent. *Mergerstat Review 1993* (Merrill Lynch Business Advisory Services, 1994) reports the average premium paid from 1984-1993 to be 39.12 percent. These premiums were based on a comparison of the selling price of the security to the seller's closing market price five business days before the initial announcement.

Any time a value is to be placed on a closely-held company, the issue of a minority interest discount should be considered. One of the more recent Internal Revenue Service Revenue Rulings (93-12) (Internal Revenue Service, 1993), revoked an older Revenue Ruling (81-253). The older Revenue Ruling would disallow a minority interest if all parties holding stock of a closely-held company were part of the same family. The newer Revenue Ruling (93-12), will not disallow a minority discount merely because all of the stock is held by a single family, even though the family combined would hold a controlling interest. This would also be the case even if a donor held 100 percent or some lesser amount of the stock immediately before the gift.

Moroney (1973) held that "most courts overvalue closely-held stocks." He also states the following

> The typical buyer of a minority interest in a closely-held corporation has every right to insist on an adequate dividend yield, because his stock having no marketability, he must be prepared to hold it for an indeterminable period of time before some event will enable him to bail out, hopefully at a profit.
>
> Some appraisers have for years had a strong, gut feeling that they should use far greater discounts for nonmarketability than the courts had allowed. From now on those appraisers need not stop at 35% merely because it is perhaps the largest discount clearly approved in a court decision. Appraisers can now site a number of known arms length transactions in which the discount ranged up to 90%.

Solk and Grant (1987) reinforce Moroney's opinion by their comments.

> Closely related to the discount for nonmarketability, is a discount for shares representing a minority interest. The rationale for both types of discount is rooted in the difficulty of selling such shares. Minority interest shares in a closely-held corporation are particularly vulnerable to this hazard because of the lack of power they represent. Not having control or even a veto over corporate policy regarding dividends, officer's salary, issuance of additional stock, and the liquidation of assets in a closely-held company makes the shares which represent such an interest uninviting to many investors. The principal difference between the nonmarketability and minority interest discount is that the former can apply to control interests as well as minority shares.

Plutchock (1985) reinforces the minority interest discount by his statement, "The IRS hard-nosed position has won preciously few adherents in courts, however, especially in the estate tax cases. Most courts will allow some discount from as little as 10 percent to as much as 50 percent to minority interest."

Elliott (1993) made a presentation to the American Bar Association in which he commented on minority discounts. He made reference to published data on control premiums and consequently to the minority interest discount. The premiums paid for control in the years 1985-1991 ranged from 37.6-54.6 percent and averaged 46.7 percent. This average translates into a minority interest discount of 31.83 percent [46.7/(100 + 46.7)]. Further support of the minority interest discount is provided by Pratt when he provides an example of a minority interest discount amounting to 40 percent.

In his presentation, Elliott makes a further case that very clearly there are two discounts from an "as if actively traded" security price, both of which are appropriate in different circumstances. The first is a nonmarketability discount and the second is a minority interest discount. Both can and should be used under the proper circumstances. These discounts, however, are not additive but rather should be taken one at a time.

A further illustration of nonmarketability discounts is contained in Elliott's presentation. It is well recognized that closed-end investment companies frequently sell at substantial discounts from their net asset value (NAV). Real estate properties suffer from the same discounts. Elliott presents data on a study of REIT's and Real Estate Operating Companies in which discounts range up to 90.6 percent. The median discount from NAV for these 32 real estate businesses was 42.6 percent.

As part of his review, Williams visited with customers, salesmen, suppliers, company technicians, factory workers, and engineers. There was good agreement that not only was Menielle a "key man" as the driver of the engine that makes the firm run but also the fuel to fire the engine. Maher (1977) suggests that the required return could be increased 30 percent where a successor to the key man has not been found or identified, and only 20 percent increase if a successor has been identified but could take up to five years to develop.

During his review of the financial statements Williams noted a varying amount of "other income" and that the category "other assets" contained a larger amount than he expected, so he asked Menielle if there was something unusual about the distribution of the assets—how they were invested. Menielle and his accountant were the only staff members who had a breakdown of the assets. Menielle explained that he had a few thoughts in his mind soon after he incorporated but had not settled on the most beneficial use of earnings retained in the business. Menielle decided to set aside one-half (50%) of net income and invest these funds in the Vanguard 500 portfolio. (See Table 8 for investments and performance.) He was of the opinion that this amount was not needed for new capital budgeting projects since he had not been able to find related projects which were profitable that would permit the firm to grow. Since sales were already made nationwide and in some foreign countries, a widening of the sales area would not prove profitable. The justification for investing in an index mutual fund came from his venture capital professor, who is now making the firm valuation for him. The choices considered were 1) a possible profit sharing plan some time in the future; 2) a possible retirement plan for officers and or all employees; and 3) since much of his plant and equipment had been in operation for a number of years, the funds could be recovered for use in replacement, modernization and or major overhaul. Obviously Menielle is open to suggestions.

The funds invested in the mutual fund are not needed in the operation of the firm, therefore should be considered as value separate from the value of the firm. However, since the value of the mutual fund shares are controlled in the same way as the firm, the same discounts appropriate for the firm are appropriate for the mutual fund values.

V. VALUE CALCULATIONS

Calculation of the value of the shares of stock to be given as a gift involves use of average earnings for the 1990-1995 time period after

Table 8
Fluid Measure and Disbursement Vanguard 500 Investments

Year	Net Income	Investment 50% Prior Year Income	Cumulative Cost	Dec. 31 NAV	Shares Bought	Income Dividends	Captital Gains Distribution	Shares Reinvested	Cumulative Shares	Cumulative Value	Return
1984	$100,837										
1985	87,747	$50,418	$50,418	$22.29	2261.933	$0.91	$1.61				
1986	26,694	43,873	94,292	24.27	1807.725	0.89	2.02	271.208	4340.87	$105,353	1.219
1987	28,375	13,347	107,638	24.65	541.460	0.69	0.17	63.069	4945.40	121,904	1.030
1988	130,557	14,187	121,826	27.18	521.983	1.10	0.32	28.288	5495.67	149,372	1.160
1989	13,584	65,278	187,104	33.64	1940.502	1.20	0.75	30.258	7466.43	251,170	1.309
1990	108,707	6,792	193,896	31.24	217.414	1.17	0.10	78.887	7762.73	242,508	0.966
1991	98,474	54,353	248,250	39.32	1382.337	1.15	0.12	7.022	9152.09	359,860	1.299
1992	81,493	49,237	297,487	40.97	1201.781	1.12	0.10	41.163	10395.03	425,885	1.073
1993	109,114	40,746	338,233	43.83	929.649	1.13	0.03	31.806	11356.48	497,755	1.098
1994	65,864	54,557	392,790	42.97	1269.653	1.17	0.20	29.640	12655.78	543,819	1.012
1995	$36,128	$32,932	$425,722	$51.15*	643.832	$0.44		10.922	13310.53	$680,834	1.201

Note: *June 30, 1995

making adjustments for the excess officer compensation and removal of the other income that came from the mutual fund. After adjustment earnings are $146,641. The capitalization rate using Pratts "build up" approach, or a long-term government bond plus a small capitalization risk premium has been estimated to be 19.1 percent. The minimum nonmarketability discount documented is about 30 percent, and a minority interest discount of about 32 percent. The "key man" discount is open to interpretation depending on the length of time to complete his training. The interest or segment of the business to be given as a gift is 10 percent.

The "as if actively traded" value of FM&D is as follows:

$$\frac{\textit{Six Year Average Earnings}}{\textit{Small Cap Capitalization Rate}} = \frac{\$146{,}641}{0.191} = \$767{,}754.$$

The most recent value given for the mutual fund is $680,834. As a practical matter this could be updated to the date of the valuation by multiplying the number of shares held by the most recent price shown in the *Wall Street Journal* in the Mutual Fund section.

$767,754	"as if actively traded" Value of FM&D Operations,
680,834	Value of Vanguard 500 Mutual Fund from Table 8.
$1,448,588	
434,576	Non-Marketability Discount 30%
$1,014,012	
324,484	Minority Discount 32%
689,528	
68,953	"Key Man" discount 10%
$620,575	
	or
($137,906)	"Key Man" discount 20%
($551,622)	

Interest to be valued 10%

$62,058 (Key Man 10%) to $55,162 (Key Man 20%).

A reality check can be made for reasonableness by calculating the return based on the value estimated. Pratt and others have suggested that the return should range from a minimum of 20 percent to about 40 percent, with most in the range of 25-35 percent. Per share distributions in 1994 multiplied by the number of shares held provides a rough estimate of the distributions expected in 1995.

$$\begin{array}{rl} \$146,641 & \text{Earnings Expected} \\ 18,235 & \text{Distributions Expected.} \\ \hline \$164,876 & \end{array}$$

$$\frac{(\$164,876)}{\$620,575)} = 26.57\% \text{ (10\% Key Man)}$$

$$\frac{(\$164,876)}{(\$551,622)} = 29.89\% \text{ (20\% Key Man).}$$

Depending on the "Key Man" discount taken the returns on value are from 26.57 percent to 29.89 percent. Certainly within a reasonable range.

Mutual Fund Return

Given the information in Table 8 some investors may elect to determine the returns on an arithmetic basis. The annualized geometric return for the time series through 1994 was 12.37 percent and half-way through 1995 it was 13.85 percent.

VI. SUMMARY AND CONCLUSIONS

The development of this hypothetical case was for the purpose of illustrating some of the many valuation issues as they pertain to small closely-held businesses. If capitalization of reported earnings for the most recent six years at a "build-up" rate can be accepted as a reasonable approach to determine an "as if actively traded" value, a couple of the issues can be shown along with the logic of making adjustments to the reported accounting data. With no adjustment, the "as if actively traded" value could be determined by capitalizing the average six year earnings of $83,297 to obtain a value of $436,109.94 ($83,297/.191).

In adjusting the income statement by reducing officer compensation to an industry level, for valuation purposes only, and removing the "other income" which is allocated to the Vanguard mutual fund, the six year average net income is $146,641, capitalization of which provides a value indication of $767,754. The value of the mutual fund is $680,834 using mid-year reported net asset value, for a total value at $1,448,588, or some 332 percent of the unadjusted valuations. (Even the IRS would like that.)

For any investor, a small closely-held business suffers from the lack of marketability, but a minority interest in that same firm suffers the same

lack of marketability, and in addition has absolutely no control over the firm, policies, practices or procedures followed. Each of these marketability issues must be considered when an investment in the firm in question is held by a shareholder. The issue is not, should there be a discount from an as if actively traded value, but how large should the discount be.

The "key man" discount sometimes is confused with retirement of the special employee. When any single employee (owner or otherwise) is responsible for sales, profit and/or efficiency in such a way that elimination of the services of that individual will cause a loss of business and/or profit, a "key man" discount is appropriate. Retirement is only one reason for the loss of services of an individual. The individual could be hired away, become ill, or even form another company himself.

After taking non-marketability, minority interest and "key man" discounts, the firm value is still more than 26 percent higher than the first pass unadjusted income statement approach. However that is not the real issue in this case. The issue is finding a value for the firm that will satisfy the trade-off between a willing buyer and a willing seller, both of whom have all relevant information and no pressure nor obligation to complete the transaction. There are only a few investors who would willingly invest in a minority interest of a small closely-held firm without some assurance of an acceptable return. For that reason, as stated earlier, investors prefer a return test of between 25 and 35 percent. As calculated the return on the equity investment is shown in the range of 26.57-29.89 percent. This return could attract a few investors, but there is no assurance that that will happen. The issues are clear, the solutions may be difficult to find. Much effort remains to find acceptable solutions.

NOTE

1. Edwin A. Gallum, CCH Dec 32,830 (M), 233 TCM 1316 (1974) allowed 55 percent. Est. of Maurice Gustave Heckscher, CCH Dec 33,023, 63TC 485 (1975) allowed 48 percent. Although Est. of Ernest E. Kirkpatrick, CCH Dec 33,524 (M), 34 TCM 1490 (1975) found per share values without mentioning discount, expert witnesses for both sides used 50 percent—the first time a government witness recommended 50 percent. A historic event, indeed!" Contained in Moroney), (1977), p. 320

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